

**FIRST AUSSIE
REVIEWS**

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Sony's hot new
Net MD music player

Handspring Treo
The Palm that's
also a mobile phone



apc

May 2002

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- 128MB 266MHz DDR SDRAM • 56K Modem
- ~~48X Max CD-ROM~~ ▶ **FREE Upgrade to DVD-ROM***
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- 17" Colour Monitor (15.9" v.i.s.) • 3.5" Floppy Drive
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- Latest Mobile Intel® Pentium® 4 Processor – M technology
- Desktop replacement
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- Optional enhanced high res screens

- Mobile Intel® Pentium® III Processor 1.2GHz – M supporting Enhanced Intel® Speedstep® technology • 30GB* Hard Drive
- 256MB PC133 SDRAM
- 3D Positional Sound with Wavetable
- 14.1" XGA TFT Display (1024x768 res)
- 32MB DDR 4xAGP Nvidia® GeForce 2Go • 3D video
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- Internal Mini-PCI 56K Capable Fax Modem
- Microsoft® Windows® XP Home Edition
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DIMENSION™ 4300S

- Intel® Pentium® 4 Processor 1.6GHz
- 128MB 133MHz SDRAM • 20GB¹ Hard Drive
- 48X Max CD-ROM • 3.5" Floppy Drive
- Integrated audio with SoundBlaster® Pro/16 compatibility
- 16MB ATI Rage Ultra 4x AGP Graphics Card
- 15" Colour Monitor (13.8" v.i.s.)
- Microsoft® Windows® XP Home Edition
- Microsoft® Works Suite 2002 – OEM Version
- Norton Anti-Virus 2002 – OEM Version
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on all featured Inspiron™ systems.

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- Affordable and convenient
- The flexibility of a 3 spindle notebook design
- Offer Intel® Celeron® and Mobile Intel® Pentium® III – M Processor

- Mobile Intel® Pentium® III Processor 1GHz – M featuring Intel® Speedstep™ technology • 128MB SDRAM
- 20GB¹ Hard Drive • Intel® Integrated 3D AGP graphics with up to 32MB of shared system memory
- 14.1" XGA TFT Display (1024x768res)
- SoundBlaster compatible Audio
- 24X Max CD-ROM • **FREE Upgrade to DVD-ROM⁶**
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- 1-Year Limited Warranty (Next Business Day On-site² Service)
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The new Inspiron™ 8200, Dell's fastest notebook range ever.

Do you want to push the speed limit? Now you can, legally, with the exceptionally fast Inspiron™ 8200 powered by the brand new Mobile Intel® Pentium® 4 Processor – M. It's one of the coolest, fastest and most versatile Mobile Processors available. The result? Better performance. Plus the new Inspiron™ 8200 offers an amazing new enhanced screen that's brighter, clearer and more dynamic. So if you're caught speeding, tell them you were only doing 1.76GHz – honestly.



More computer for your money. Easy as



Dell's new Inspiron™ 8200



DELL INSPIRON™ 8200 NOTEBOOK

Dell's Fastest Notebook Range Ever

The most powerful notebook from Dell™ to date, the Inspiron™ 8200 gives you the performance of a desktop, with the mobility that only a notebook can offer. The Inspiron™ 8200 is driven by the latest technology, housing the awesome new **Mobile Intel® Pentium® 4 Processor – M**. It gives you the speed and support to comfortably handle processor intensive applications. Together with the optional 64MB nVidia GeForce 4 440Go™ graphics adaptor and optional enhanced high resolution 15" display, the 8200 has the ability to easily tackle the very latest in 3D graphic applications. Choose the Inspiron™ 8200 for a desktop replacement that offers real desktop power.

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- 512KB L2 cache
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- 3.5" FDD
- 15" Super XGA+TFT Display (1400x1050 res)
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DELL DIMENSION™ 4400 DESKTOP

The Dimension™ 4400 gives you looks and brains

If you're looking for a machine that can deliver power and performance without the price - start with the Dell Dimension™ 4400 desktop. Packed with the Intel® Pentium® 4 Processor, the Dimension™ 4400 also comes equipped with powerful DDR SDRAM. This combination of features and great pricing combine to make it one of the most value packed desktop solutions on the market. Whether you're looking for a system to handle graphic intense 3D applications, or a desktop that can grow with your business, the Dimension™ 4400 is the crème of the crop.

DIMENSION™ 4400 DESKTOP

- Intel® Pentium® 4 Processor 1.7GHz
- 128MB 266MHz DDR SDRAM
- 20GB¹ Hard Drive
- 48X Max CD-ROM
- 3.5" FDD
- Integrated Audio with SoundBlaster® @ Pro/16 Compatibility
- ~~15" Colour Monitor (13.8" v.i.s)~~
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You'll dig this corker all-action Hong Kong-style cops and robbers mayhem.



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Smash it, bash it, just go crazy in Rockstar's controversial game.

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The hottest new hardware and software is always first in APC!

Pentium 4 Notebooks

Intel says the Pentium 4 Mobile processor is a must-have for serious road warriors. We've taken a good hard look at the chip, and the first three P4M notebooks from Dell, IBM and Toshiba, and we beg to differ.



Handspring Treo 180

Phone meets handheld in this cool all-in-one wireless communicator.



Panasonic Lumix DMC-LC5

Digital cameras may not be their stock in trade, but Panasonic impressed us with this sharp-shooter.



Sony Net MD Walkman

Great sound, shame about the copy protection . . .

Adobe GoLive 6

Web authoring integrates neatly with Adobe's design-related software.

AG Neovo S-19

It may be pricey, but this monitor is worth every penny.



Microsoft Wireless Desktop

Cut the cables with Microsoft's new keyboard-and-mouse combo.

Kensington Expert Mouse Pro Wireless

Cop a feel of this amazingly tactile mouse.

3D Prophet All-In-Wonder Radeon 8500DV

For gaming and graphics fun, this is a must for anyone wanting real grunt.



ZoneAlarm Pro 3.0

Bullet-proof protection at the right price.

131 WINDOWS

There's a heap of excellent PC games on the Windows platform. So don't get hung up on Xbox, PlayStation and others — the PC is also where it's at. Windows guru Serdar Yegulalp takes you through the ins and outs of Windows-based games and reckons XP has plenty to offer hardcore gamers, even if it's DOS-based.

135 FLASH

Keeping a site freshly pumped with content takes time and effort. David Emberton looks at the RSS (Rich Site Summary) format and how these XML-subset files — originally designed by Netscape Communications to publish news channels — can display fresh headlines.

139 PHOTOSHOP

Adobe's flagship image editing software can be even easier to use when you design Photoshop's interface to reflect the way you work. Trevor Morris shows you how to reduce screen clutter, customise status bar info and keep guides showing while toggling on/off various selections.

142 LINUX

Linux is cool. It's inexpensive, stable, the software is free, and it's easily integrated with other operating systems. Matt Overington shows Linux-heads how to "rock da house" by using Linux as an audio application for MP3s, MOD files and streaming with SHOUTcast.

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EXCITING NEW FEATURES

This month sees the introduction of an exciting new feature to apcmag.com: **Keywords**. Using APC keywords you'll be able to access the information you want faster. Keywords can appear throughout the magazine, with competitions and even online.

To use Keywords, take note of the actual words printed, head to apcmag.com and type the keywords into the search page access the information. For example, you might see printed, "Find out what's inside APC this month. Keywords: **MAY ONSALE**". You would then type "Keywords: **MAY ONSALE**" into the search page to access the links.

THREADS

Each month APC receives many comments and opinions through our Web site and this month saw some interesting action centred on January's *Lord of the Rings* feature, "Tech Wizardry".

"Many companies can save big money by switching to Linux, but this threatens Microsoft," writes Gavin, "I know from elsewhere that Linux is fast becoming the standard operating system for creating special effects in motion pictures." Daruisz contributes, "Why doesn't the article mention the computer technology used to make this film? Is it because it wasn't MS windoze?"

What do you think? Have your say. Keywords: **TECH WIZARDRY**

www.apcstart.com

As many of you know, APC has published a "lite" version of apcmag.com for quite sometime. "Start" as it is known, is intended to be a mainly text-based links portal for you to start your Internet journey from. It is organised into separate categories and all the links are sorted in an easy to read column format.

The site is updated daily with the latest news and features from apcmag.com and also contains a powerful search feature that allows you to instantly search over 12 popular search engines.



cutting edge + good looks = (cool image)²

Be amazed at the sleek lines and the smooth style of BenQ's smart panel monitors. Merging extraordinary good looks with slimness, BenQ's smart panel range fits beautifully into your office or home to create a vivid image where ever it stands. With their impressive 15" and 17" screens and exquisite LCD resolution, they provide users with superior, larger than life pictures that will mesmerise! And for those who demand simplicity, BenQ's unique ikey feature automatically adjusts the appearance to produce the perfect display.

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CD CONTENTS

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FEATURES

CD BURNING SOFTWARE Apple Disc Burner, Cdrecord, CDRWin v3.8e, NTI CD-Maker Professional Edition 5.0, RecordNow MAX 4.0 **HOME STUDIOS** Acid Pro 3.0, ACID Xpress 3.0f, Reason 1.0, Sound Forge 5.0e build 248 **MP3 PLAYERS** J. River Media Jukebox, Liquid Player, MusicMatch Jukebox, RealOne Player, Winamp 2.78, Windows Media Player 7.1 for Mac **LIFE AFTER NAPSTER** Audiogalaxy Satellite 0.609, Comback Music Agent 1.2, LimeWire 2.2.4, Morpheus Preview Edition **NET RADIO** AnalogX SimpleServer:Shout 1.00, IceCast 1.3.0, SHOUTcast Server DNAS 1.8.2, SHOUTcast DSP Plug-in for Winamp 1.0b

WORKSHOP

MAC OS Contacts -> iPod 1.0, iPod Free File Sync 2.3 (iPod Free File Synx 2.3 for Mac OS X), Plug Tunes 1.1.2, PodMaster 1000 b9.9, Xpod 1.1.2 **LINUX** Blade Encoder, Icecast, Lame Encoder, MP3 Database, MySQL Server, Ogg Vorbis Tools, Ogg Vorbis Library: libvorbis, Ogg Vorbis Library: libogg, Ogg Vorbis Library: libao, perl: Tk-MesgBox module, perl: Tk-GBARR module, perl: Tk module, perl: Mysql module, perl: MP3-Info module, perl: DBI module, RealPlayer 8.0, RipperX, XMMS 1.2.7 For Redhat Linux, XMMS OGG Vorbis plug-in **PHOTOSHOP** Photoshop 6 Keyboard Shortcuts, RoadSignArrow.csh, ShapesSign.psd, ShapesSign-Fancy.psd, WallPampered 2.0 **FLASH** ChannelViewer fla, fetch.php, XMLnitro.bin

NEED TO LOAD

WINDOWS Arles Image Web Page Creator 4.73, FreeRAM XP Lite 1.03, PCGen 2.4.9, RegCleaner 4.3, Roxio Goback Deluxe 3.1 **MAC** Hiragana and Katakana 1.0.1, ImageDV 1.2, KidsMenu 1.5, MT-NewsWatcher 3.2, Reckless Drivin' 1.3.1 **LINUX** Icecast, MySQL Server, RealPlayer 8.0, Search and Rescue, Wallpaper Control 1.4

REQUESTS

Ad-aware 5.62, POS 2003 **TOOLKIT** Adobe Acrobat Reader 5.05, Aladdin StuffIt Expander 6.5.1, BitchX 1.0c18, Downloader for X 1.30, Eudora 5.1, FinderPop 1.9.2, Fresh Download 3.25, GKrellM 1.2.9, GraphicConverter 4.2, ICQ 2001b v5.18 Build 3659, Interarchy 5.0.1, Licq 1.0.4, Palm Desktop 2.6.3, PowerStrip 3.15, ProZilla 1.3.6, RealPlayer 8.0 Basic, Sisoft SANDRA 2001te (5.8.11), smIRcLe 1.0.1a25, TechTool Lite 3.0.1, Tex-Edit Plus 4.1.2, Toms Root Boot disk 1.7.361, Webmin 0.93, Winamp 2.78, Windows Media Player 7.1 for Mac, WinZip 8.1, WS_FTP LE 5.08, XMMS 1.2.77

BROWSERS Microsoft Internet Explorer 5.1, Microsoft Internet Explorer 6.0, Netscape 6.2.1, Opera 6.01

CD 2 INDEX

FEATURES

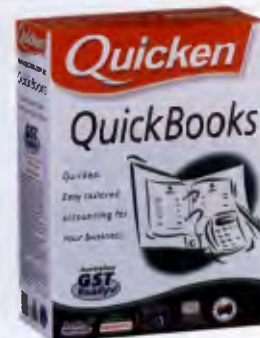
BUSINESS FINANCE EasyBooks 10.03.12, ezBooks 2.0, MYOB FirstAccounts 3.5, MYOB Premier 5, QuickBooks 8.1, ShareExpress2000 3.0.3 **PERSONAL FINANCE** My Expense Tracker 1.0, My Financial Planner 2.3, Quicken Personal Plus 2002

TECHLIFE

GAMES Command & Conquer: Renegade Multiplayer Demo, Escape Velocity: Nova 1.0, Serious Sam: The Second Encounter demo, Sid Meier's SimGolf Demo, Tranquility 5.05

DIRECTX

DirectX 8.1 runtime



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ISSUE 281 MAY 2002



If there was ever a clear-cut case of analogue thinking in the digital age, it's got to be the way that the music industry has handled MP3.

Beyond its roots as a mere file compression format (and not even the best one at that), MP3 has become the catch-all code for the digital music revolution — for creating it, playing it and sharing it.

So what happened? In the same way that harsh economic reality collided with the visions of dot com dreamers, MP3 and everything it stands for has effectively been stonewalled by the music recording and distribution industry (which instead should have embraced the technology and turned downloads into otherwise untapped dollars).

I can rarely justify spending \$30 on a new CD. At \$15-20 it's an easier call, which is why so much of my CD collection has been bought second-hand — especially when I discover new artists and go in search of their back-catalogue. But if I could digitally download the contents of a CD for \$5 or even \$10, it's a no-risk proposition. I don't always need the CD itself; I can burn my own disc if I want, either as a standard audio CD or a collection of MP3 or WMA tracks (WMA is my preferred format, for its superior sound quality at smaller file sizes, enabling more music per megabyte). Or, I can leave the tracks on my notebook and shuttle them onto my portable player as desired.

Yes, undoubtedly I'll share them with friends, and they'll share tracks with me. This simply increases our total consumption of music. We're all going to end up buying more music somewhere along the line. But that seems to be a song that the record companies don't want to hear.

David Flynn

The Matrix took you to a place you'd never been before
Now you can go even further

THE MATRIX REVISITED

PG



Matrix Revisited Special Features

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- > What's the matrix.com?
- > The Dance of the Master --
 - > Yuen Wo Ping's
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- > The True Followers
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Wet Wall

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Features! Juke Box - chapter
names also attached.
> English Subtitles

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DVD
VIDEO

In-depth exploration of the filmmaking process
Sneak peek on location of the upcoming sequel
Never-before-seen footage and more



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NEED TO

HEAD-TURNER

Nokia's slick new 7210 will be available in the third quarter of this year — and not a moment too soon. Featuring tri-band GSM, GPRS, Multimedia Messaging Service (MMS) and stereo FM radio, it's a handset to dazzle the senses. It's also equipped with polyphonic ring tones that support the sounds of 43 instruments, of which four notes can be played simultaneously. And the large full-colour display will ensure the 7210 gets its fair share of attention.

www.nokia.com.au



MO' MUSIC

A huge 20GB hard disk in the new Nomad Jukebox 3 means that you can enjoy your entire music collection (and several of your friends', too) wherever you go. It plays MP3, WMA and WAV files, connects via Optical-in, FireWire or USB, and the optional second battery extends playtime to 22 hours. Creative has also boosted the already impressive four-channel sound support with more preset effects.

www.australia.creative.com



KNOW

GO OUT WITH A BANG

No, it's not a funky new pointing device. Bang and Olufsen's BeoSound 2 is in fact the latest in Scandinavian coolmanship translated to a portable MP3 player. The top portion, which looks like a flying saucer but is in fact the body of the player, detaches from the bottom half — a USB docking station tethered to your PC. As there's no internal memory, your favourite songs are stored on SD memory cards — Bang and Olufsen generously tosses in a 128MB wafer to get you started. However, one of these beauties will set you back a cool \$1,250.

www.bang-olufsen.com



NICE AND EASY

If pointing and shooting is about as much as you want to know about digital photography, Kodak's latest EasyShare LS420 camera could be just your thang. With a two megapixel resolution and 3X digital zoom, the LS420 is designed with simplicity in mind, and connecting to a PC is assisted by a docking cradle and Kodak Picture Software. 8MB of memory is built-in with an SD/MMC slot provided for expansion.

www.kodak.com



LIGHT YEARS AHEAD

So you think fold-up keyboards are smart? Ha! Now there's VKB, a keyboard that appears out of thin air. This full-size virtual keyboard from developer VKB (www.vkb.co.il) uses light from a mini projector to detect each time a finger presses one of the invisible red keys. Just plug the projector into a laptop or handheld and it'll also simulate a mousepad. The flickering red keyboard is only a prototype at this stage, having made its debut at the CeBIT computer fair in Germany.

www.vkb.co.il

► The wild side of wireless. A member of the Sydney Wireless group brandishes his antenna.

WIRELESS WINS...

LOOK UP IN THE SKY, SOMEONE'S BUILDING A FREE DATA NETWORK ABOVE YOUR HEAD.

Across Sydney and cities around Australia, computer junkies are building their own makeshift wireless networks pieced together with jerry-rigged antennas made from Milo tins and Pringles cans. It's a lot faster than using dial-up modems, plus you get to spend all day and night playing multiplayer games or chatting, and the best part is it's all free.

No, it's not a dream, it's 802.11 — the in-vogue wireless technology that is exploding in popularity as a way to setup networks outside the control of carriers like Telstra. Using a chunk of radio spectrum allocated globally for free public use, 802.11 creates an invisible wireless network a few hundred metres in radius — useful for offices and airports. But make a few tricky "hacks" and then hang a makeshift antenna out your bedroom window, and suddenly you're online with the entire neighbourhood.

One group, Sydney Wireless, hopes to eventually criss-cross the entire city with this free public network. They claim it's possible to send and receive data distances of 7km or more, though there's a lot of fiddling — you

need an uninterrupted line of sight between each antenna, which is often difficult. A quick trip to the Sydney Wireless Web site (www.sydneywireless.com) shows the location of antennas across the city: a fence post with antenna, a rooftop, a terrace house, a balcony.

At the moment, there's also no Internet access. To share Net access requires a carrier licence, which requires money that amateur groups like Sydney Wireless don't have. Before you groan, there's still a lot you can do with 802.11 — sharing files, streaming audio and video, chatting on ICQ, running an ftp server, playing multiplayer games, mail servers, even making phone calls using voice-over Net software.

"The biggest factor here is zero cost," says Duane Groth from Sydney Wireless. It can cost a few hundred dollars for an 802.11 card, plus more for an antenna and cabling, but by bypassing carriers like Telstra there's no time charges or download fees to pay.

Interest has exploded, with wireless groups appearing in most major cities as well as rural areas. Some see it as a kind of grassroots

backlash to price hikes by Telstra, though Groth says it's a "supplementary service", not a replacement for Telstra.

"A lot of areas that can't get broadband, or people can't justify cost. This is for them," he explained.

William Maher

DOWN YOUR STREET

You're looking at just part of a map showing the 500 or so people who have registered interest in joining the Sydney Wireless network. Live in another state? Then visit www.sydneywireless.com to find a wireless group near you.



WIRELESS SINS

While grassroots wireless groups play games and share files, a push to setup commercial wireless Internet services is also beginning — though a recent incident shows it's not all smooth sailing.

Stung by price hikes and service problems with ADSL and cable Internet, the eyes of Net junkies lit up when a full page advertisement by "Hughes Corporation" for unlimited downloads via wireless broadband at \$70 per month appeared in Brisbane's *Courier Mail*.

The news rapidly spread online through broadband community sites such as Whirlpool (www.whirlpool.net.au). Some were skeptical, but others wanted to believe so badly that they supplied credit card and personal details to the listed phone number in the hope of an April installation.

Like some cruel joke, the offer soon turned out to be a sham. The "real" Hughes, the mega-corporation behind wireless satellite broadband in the United States, issued a terse statement disclaiming any involvement in the project, as did Ericsson, another company mentioned as being involved with the Brisbane offering.

Dan Warne of Whirlpool has his own idea why the scheme seemed to meet with such enthusiasm. "The main reason would be the fact that it [the broadband] was unlimited, which is incredibly attractive to users."

Warne acknowledges that the person or persons behind the scam had done their homework, stating that the perpetrator was "very aware of the suffering of broadband users". The timing was also quite fortuitous. As news broke of the offering in early March, a segment of the broadband population were busy searching for another provider, after exiting without penalty from Telstra after the telco engaged in further changes to its pricing structure.

For now, the only option for broadband fanatics wanting wireless at home might still be do-it-yourself groups like Sydney Wireless (see opposite page). "It's a bit hard to see how there's a business case to roll out enough wireless LAN to give consumers access wherever they want it," said Robin Simpson, mobile and wireless researcher for Gartner.

Justin Kranz

WHO'S PAYING FOR WI-FI?

The prognosis for commercial wireless isn't good, though 802.11 is taking off in niche areas. Commercial services are in fact appearing in Australia, you just probably haven't noticed them. For the moment there's only a few commercial providers including SkyNetGlobal (\$19.95 for 50 hours access and unlimited downloads per month) and Azure Wireless, and it's limited to places like airports, hotels, shopping centers and Starbucks café. But will these services ever make it out of the coffee shops and Qantas lounges? "It's pretty hard to see it happening in Australia," argues Gartner analyst Robin Simpson. "For a consumer to use it, it's gotta be ubiquitous. That's extremely hard," he said. Still, there's no shortage of potential interest: IDC estimates at least 80,000 laptops have been sold in Australia that are Wi-Fi ready.



► Commercial Wi-Fi everywhere? Sadly, it's just a dream for now.

THE CABLE GUYS

If you're after fast Net access, ADSL-style, it looks like now might be the time to start smiling. Rumour has it that a large national retailer will soon be stocking off-the-shelf ADSL modems in stores.

Smaller ISPs are also jumping into the ADSL game, thanks to a pricing break from Telstra (and not before time). South Australian ISP Internode has jumped the border, and is now offering the fast Net service in NSW and Victoria. In Melbourne, Pacific Internet has launched residential HomeDSL service. There's even XiS, the ADSL provider for 14 to 25-year-old geeks, which found itself with a backlog of more than 1,000 customers to sign-up.

Meanwhile, Telstra is throwing \$50 million at efforts to pump up enthusiasm for broadband.

MEANWHILE IN BROADBAND

Net access over the power lines? You've got to be joking, right?

While wireless buffs hook up makeshift antennas, the broadband cable and ADSL crowd is dreaming about their own left-of-field Net access via, you guessed it, those wooden power poles.

It's still pie-in-the-sky stuff, experimented with in the US and in Europe, but ears pricked up recently when trials began closer to home in Singapore. The technology is being tested by Pacific Internet, which also operates in Australia, and is achieving data rates of 2Mbit/s -- though the technology has been tested elsewhere at 4.5Mbit/s or faster.

Still, no-one's holding their breath for the scheme to see the light of day. For the moment, broadband users have to rest their hopes on cable and ADSL.



► "Ok Frank, email's ready."



RACE TECH

Is it real life, is it a video game? Organisers of the World Rally Championship are digitising real-life racers for "virtual" battles. Normally drivers start the race one after another, each battling against the clock. Now they're being tracked (GPS units in each car are accurate to within 80cm) and the race is being recreated Nintendo-style with the cars side-by-side as a way to compare performances. The Virtual Spectator software uses 3D models of cars and photo-realistic maps of the race stages.



► *Hmmm, no mud spray?*

IMAC PRICE RISE

Okay, so maybe great computer design does come at a price. Rising costs for LCD flat screens and memory has bumped up the price of Apple's cool new iMac by \$200. Since the iMac's launch in January, the company claims the cost of flat screens has jumped 25%. Apple has shipped more than 125,000 new iMacs and is now shipping 5,000 of the suckers per day.

CASH FOR CDS

Some people take empty beer cans to the recycler, but maybe someday it'll be old CDs. Believe it or not, there's gold — yep, the heavy yellow stuff — to be found in CDs, though you need a stack of 'em to make it worthwhile. A report by the Optical Storage Technology Association states that for each tonne of CD-R waste, you can recover 1.316kg of gold. We're hoping there's twice as much gold in those yellow coloured CD-Rs.

BIG BUZZ

PSSST? WANNA SNEAK PEEK AT THE

NEXT BIG THING IN MOBILE PHONES?

It's a weird place for cutting edge technology — an old telephone exchange building in downtown Adelaide. Inside, the halls smell faintly of antiseptic, like a hospital, and the wood panelling in the creaky old lifts is covered in graffiti. Travel upstairs though, and you'll find a mini-nerve centre housing the future of broadband mobile technology.

It's called 3G — the exciting voice, video and interactive mobile phone technology that will be the next big upgrade to GSM networks. For years carriers have been talking about 3G, and spending lots of money, but up till now there hasn't been much to show for it.

Tired of waiting, Alcatel has setup its own experimental 3G network in Adelaide, the first of its kind in Australia. The technology services an area from the Royal Adelaide Hospital in the city's east to the University of SA in the west.

With a 3G phone, 3G-enabled laptop or PDA, you can videoconference, send pictures, download videos and browse the Web much faster than with a GSM phone. Stroll down the street and you might get interactive movie trailers. You'll also get games, with high-quality video and stereo sound.

The secret is bandwidth. Just like you can download music faster with Telstra's Bigpond cable, 3G sends data at much higher speeds than today's mobile phones. Unfortunately, you will need to be within 100 metres of a base station if you want the cool 2Mb/s data speed, or it's back to 384kbit/s.

The big question is, is anyone willing to pay for any of this? Up till now, the only big hit among Web-savvy mobile users has been SMS text messaging. Telstra and other carriers say they'll wait for services they are sure will excite mobile phone owners. "As it stands today, we haven't got a business case to roll-out 3G today," said Telstra's Rick Wakeham.

Crunch time for 3G in Australia comes in October, when Telstra finally gives local carriers their blocks of radio spectrum. Even then, there's no real sign that anyone will be selling the futuristic phones, which include colour screens an in-built cameras. Alcatel's local boss Ross Fowler is confident the technology will



► *Phone? Widescreen TV? No, it's 3G.*

be a hit: "Here we are able to show [3G] does exist, we can do it, and we are ready to go."

William Maher

FUNKY PHONES

Utopian visions of mobile telephony in the near future are fine, but what's the hottest thing on the market at present? Well for starters, there's a new range of Nokia phones with colour screens, "polyphonic" ring tones and gamepacks. New phones like Nokia's 7210 (see "Gear" on page 10) can also download Java applications, such as mini games and business applications. The SMS crowd have reason to smile too — some newer phones on the market support MMS (Multimedia Messaging Service) or EMS (Enhanced Messaging Service), which allow music, pictures and screen savers to be sent in the same format as SMS to compatible phones.

Justin Kranzl

VIRUS VIGILANTES

FED UP WITH VIRUS ATTACKS, A GROUP OF YOUNG CODERS ARE FIGHTING FIRE WITH FIRE.

Their weapon is their very own virus — usually a sure-fire way of getting yourself branded as part of the “notorious” hacker scene. But instead of wreaking computer havoc, the group of friends aged between 19 and 26 say it’s all for a good cause.

“You’ve seen the big ‘I Love You’ virus and others spreading across the world with such drama. Obviously the means we’ve got to remove viruses is not working. It’s that simple — it’s just not working,” says the group’s 19-year-old leader, Matt Dobinson, aka “acid”.

Dobinson’s controversial solution is a PC “antibiotic”. Through some crafty coding, Dobinson has created a virus that doesn’t just act like other viruses, it eliminates them. Hidden inside software shared on CDs, or on games downloaded via the Net, the “antibiotic” sneaks from PC to PC, looking for enemy viruses to latch onto. Once it finds infected files, it overwrites the enemy virus and then removes itself.

Dobinson says he has a “bunch of people dying to test” his virus antibiotic. He’s testing the code to check for bugs, and hopes to have a working prototype soon.

If the idea of a maverick virus secretly roaming



your system with guns at the ready has you worried, you can breathe easy for now. Dobinson says he has no plans yet to release his good-guy virus. If he did, he knows he’d be running the risk of breaking hacking laws; it’s illegal to access a data system and erase data without permission.

Predictably, these virus vigilantes aren’t currying any favours with the virus experts, people like Paul Ducklin at Sophos Anti-Virus. “It’s a nice idea, but flawed execution. A bit like breaking into someone’s house and nailing the doors shut to stop later burglary. On the wrong side of the line of righteousness, if you ask me,” Ducklin said.

Dobinson’s virus has some safeguards — he’s planning a self destruct timer — but Ducklin’s still not convinced: “I still think the viral bit, the self-spreading bit, the unauthorised replication, the lack of control, lack of authorisation — there’s just far too much to go wrong.”

Interestingly, Sophos Anti-Virus software now blocks similar well-meaning viruses, like one launched to counter-attack the infamous Code Red worm. Ducklin said Sophos would probably do the same for Dobinson’s antibiotic, if it ever got free.

William Maher

XBOX: THE WASHUP

The timing was all about the “mids”. Midnight, mid-week and mid-March (also, typically mid-post Christmas retail doldrums). The occasion? Microsoft’s local launch of Xbox, its entry into the next-generation console war. Thousands of eager gamers queued up outside city and suburban shopping centres across the country so they could be among the first to grab a slice of Redmond’s gaming silicon debut. According to market research outfit Inform, by the time the smoke had cleared from the initial four days of sales (ending March 17), 9,124 Xbox machines had been sold.

In the seven days leading up to March 17, Microsoft’s primary competitor Sony shipped 6511 PlayStation2 consoles on the back of price cuts, a new budget range of software, and the release of bundles including one of the most anticipated software titles in console history, Metal Gear Solid 2: Sons of Liberty.



► You’re never too young to start.

STRIKE FORCE

You fly low under enemy radar at supersonic speed and drop your payload on target, completing your first tactical strike mission like you’ve done it a thousand times before. The RAAF Strike Reconnaissance Group practice low-altitude flying and strategic mission profiles on a new fully immersive SGI Onyx 3000 series high-performance graphics system using three Infinite Reality3 graphics pipes. The F-111 (nicknamed “The Pig”) squadrons stationed at RAAF Base Amberley in Queensland are Australia’s front line strike weapon, delivering laser guided bombs, harpoon anti-ship missiles, air-to-air missiles and dumb bombs.

Fiona Angus





MORE LIMITS TO MONTHLY DIALUP PLANS

Dingo

\$35 for 400 hours and 1.5GB (\$25 with long distance call plan)

Telstra

\$38.95 for 450MB

OzEmail

\$29.95 for 650MB (12 month contract)

OptusNet

\$37.95 for 250 hours

iPrimus

\$24.95 (\$32.95 in country areas) for unlimited 4 hour sessions

TPG

\$16.99 (\$24.95 in country) for unlimited 4 hour sessions

ISP TROUBLE

Having trouble getting online? No dial tone? Tech support won't give you the time of day? You're not the only one — between October 1 and December 21 last year, the Telecommunication Industry Ombudsman (TIO) received 2,545 complaints from angry Net users. Almost 30% of complaints were about faults such as Internet slowdown, access problems, and network issues. The TIO describes the numbers as "fairly typical". Here are the numbers:

Top ISP complaints

Complaint	Percentage
Billing	34.1
Faults	29.1
Customer service	19.2
Contracts	6.3
Payment	3.2
Provision	3.5
Disconnection	2.1
Other	2.5

A TELCO ATE MY DINGO

DINGOBLUE'S DEATH IS ANOTHER NAIL IN THE COFFIN FOR "UNLIMITED" INTERNET ACCESS.

Jutta Vyner had never heard of a "download limit" before she moved to Australia. Within months of settling into her new home in Wodonga, Victoria, she discovered expensive contracts, usage meters, excess charges and dropouts was the price she had to pay for marrying an Aussie. Then she met the Dingo. "It was as close to my old (truly unlimited) Texas ISP as I could find." She spent 12 happy months chatting and emailing family. "Dingo were fantastic and virtually unlimited. It was so different to the dropouts we kept getting on Optus."

Then it all went bad. On March 5, she got her first busy signal. "I rang tech support, but they said everything was fine." Two days later, she saw on the TV news that Dingo's owner, electricity giant AGL, had lost \$45 million on the ISP and were pulling the plug. They had purchased Dingo from Optus for \$22 million in December 2000, and are fuming that their experiment to bundle electricity with Net services hasn't paid off. "AGL intends to



Discarded dingo. The ISP's mascot cries foul.

pursue a number of contractual matters with Optus relating to the original purchase," they warned.

Dingo is the last of the inexpensive generous hour/download providers with a national reach. Signs the Dingo was sick appeared late last year when readers contacted APC to report serious outages and go-slows. AGL admitted that it had reduced bandwidth capacity (APC December 2001, page 21), but customers later said Dingo pulled itself together.

Like 68,000 other Dingo customers, Vyner is looking for a new ISP. She's eyeing OzEmail's "Once Bitten" discount for Dingo customers, but doesn't want to sign a 12 month contract when she hasn't tested their service levels (she'd get cable if Telstra or Optus came to her house). "Is there no true unlimited service?"

Fiona Angus

GET LOST

WE'VE LOST ALL YOUR EMAIL AND WE'RE PULLING THE PLUG ON YOUR ACCOUNT.

Optus is deleting Excite Australia Web mail accounts in an effort to put an end to their part in the biggest and weirdest dot com tragedy in the world. But like thousands of others, Excite user Ray Garske from Brisbane just wished they'd warned him first.

Our story begins in June 1999 when Optus set up the ultimate joint cable/portal venture with billionaire US megastar Excite@Home. Excite users like Garske were supposed to start paying for a cable account. He didn't. So when Excite@Home plunged into bankruptcy in the US, Optus was left to rationalise and merge the cable and portal operation into its existing network. In September, they promised APC: "Customers won't notice any change to services."

But two months later, Garske was suddenly blocked from his Excite Australia Web mail

account. "My address book and letters from my daughter are trapped there and they won't answer email or their phone." Optus says Excite Australia is being torn down merged into OptusNet. "If people want email with us, we would advise them to become OptusNet customers," a spokesperson said. Garske received this ultimatum: "Please arrange to forward all your important email to an alternative email account, save all your email addresses and let all your friends know that your Excite email address will no longer work."

There's no hope for his lost mail. "Technical complications with mail transfer arose for those users who had accessed mail from different Excite locations," the spokesperson stated. "Their primary registration data was therefore owned by Excite US and not by Excite Australia. We are not able to retrieve that information." Garske is sad but philosophical. "I suppose that's what you get for using these 'free' services."

Fiona Angus



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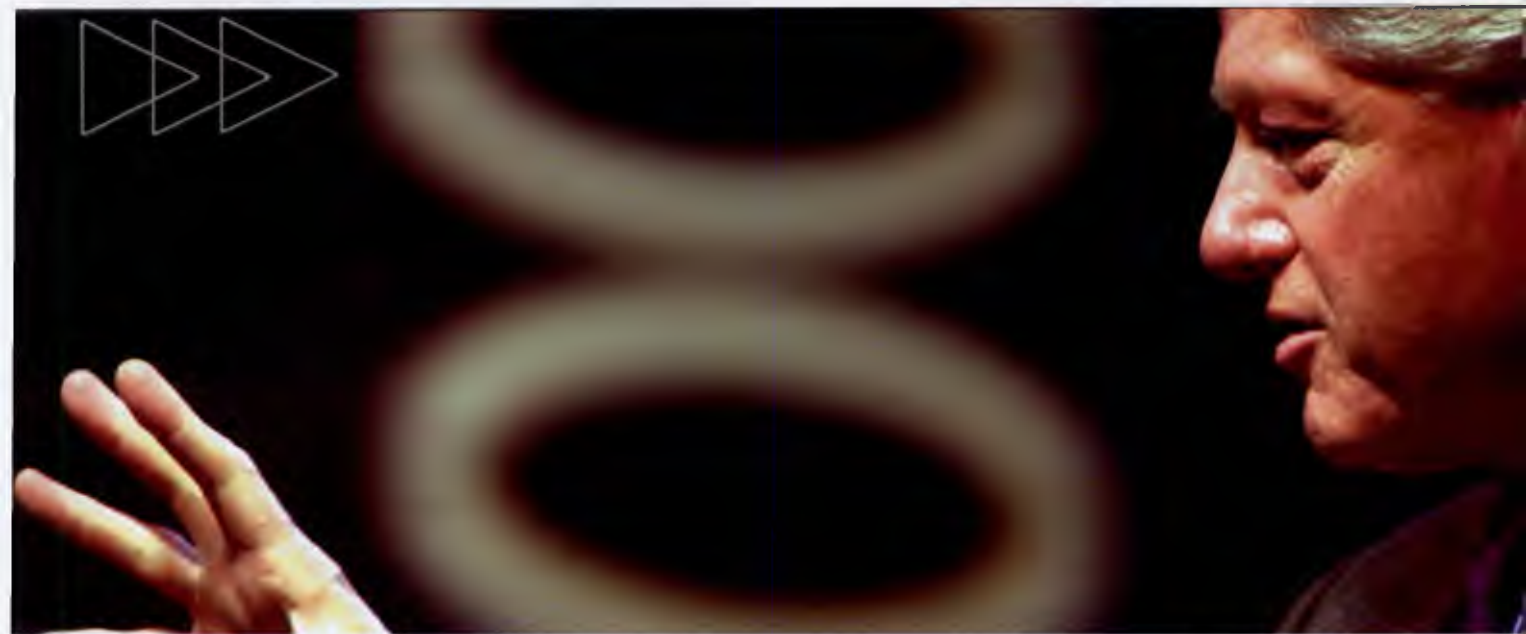
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IT-TALKFEST

FOR ONE HECTIC WEEK IN FEBRUARY, ADELAIDE PLAYED HOST TO 1,700 TECHNOLOGY LEADERS AND AN EX-PRESIDENT.

Having trouble keeping up with technology? Where is the Internet headed? When will we see cheap, reliable broadband? What does the future hold for mobile telephony?

You're not the only one — every two years some of the world's technology leaders go for a refresher course called the World Congress on IT. It's a sort of free-for-all where speakers talk about anything from the price of cable Internet to robots and X-ray telescopes.

This year the Congress seems less interested in talking about bits and bytes, and more about "big picture" issues, like who's missing out on computers. It's the caring, sharing Congress — speakers quote famous philosophers, talk about the "digital divide", and one even throws in a Dylan quote

Top-billed speaker Bill Clinton also gets in on the act, pointing out that in the poorest APEC countries only one home in 25 is expected to be on the Internet by 2008. He suggests we forgive some of the debts of these nations, so that they can direct money into technology investment.

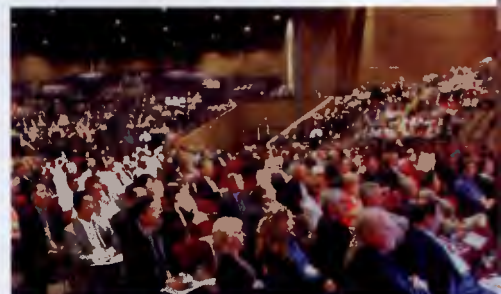
"You don't need a computer in every home, or in every school. You just need one good printer and Internet access and with that you could dramatically improve the quality of education almost overnight," Clinton argues.

There's a definite change in mood out on the exhibitors' floor, too. A few years ago this hall would have been filled with Internet companies and people in bright shirts cornering hapless suits to talk about the e-revolution.

Now, the biggest stands are for mobile phone companies and IT services. There's Telstra, SEA (software engineering), and Deep Video Imaging, who are into 3D screens. Sure, there are Internet companies here, but they're not in-your-face and they generally avoid the dot com tagline.

A South Australian at the event, Richard Pagliaro, claims there has been a complete about-face in attitudes over last 12 months. "It was a terrible year to do anything last year, so much cynicism about the dot com disaster. That seems to have gone away this year. It's been quite the reverse."

I ask Pagliaro what he thinks of Bill Clinton's address and he nods his head approvingly. "It's good to see someone's



getting the human aspect into all of this," he observes.

The forecasters are also upbeat. "You've read lots of stories about how the Net is declining," says Mark Anderson, president of US firm Technology Alliance Partners. "That's bullshit. If you study the number of data packets, it's going off the scale."

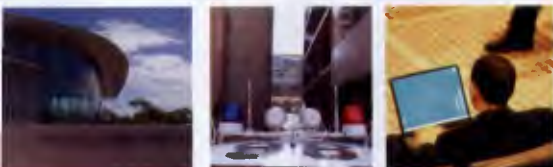
Anderson argues we're at a technology crossroad. The cable networks are nearly complete and the new data phones and wireless computers are here. Most importantly, there's now a generation of people ready and willing to start using this technology. The combination of the three could result in a "large scale revolution" in computing and communications, he says.

Still, my next taxi driver's not so sure. On the way back to the airport he tells me he's having trouble with his home Internet connection. There's too much line noise and the dial-up modem keeps dropping out. Sound familiar?

It looks like the communication revolution might have a way to go yet.

William Maher

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ONLINE AND ON COURSE

Jesse Martin, the Australian teenager renowned for his solo sailing journey around the world, is set to do it all again. This time he has a small crew at his side, a 54ft yacht called Kijana and the support of Apple Computer Australia. Dubbed "The Journey of Kijana", the trip is scheduled to take two years to complete.

Apple supplied the crew of the Kijana (the boat's name is Swahili for "young people") with three Titanium Powerbook G4s, Final Cut Pro 3 and a professional film editing system for producing the 13-part documentary of this trip. An iPod has also been supplied for the crew's entertainment needs.

The Journey of Kijana will be about sharing the crew's experiences

with other young people by producing 1-3 minute movie updates and compressing it into QuickTime files and sent via Telstra satellite to the Kijana Web site (www.kijana.net).

Special padded cases were made to store the Titanium notebooks along with accompanying accessories in one sealed unit to protect it from the rigors of sailing and outdoor use. The crew was specifically selected, not for any expertise in sailing, but interest and skills in storyboarding, writing and film production.

In fact, few had any sailing experience at all prior to joining this trip. "I wanted to show that everyday people can do this," Martin explains, adding that "I didn't want a crew of professional sailors."

Simon Tsang



▶ The Kijana (above) and Jesse Martin (right) with his new toys from Apple.



WHAT, WE ASK, MIGHT THIS TRIGGER ECONOMICALLY?

The real story is often the financial one. We go behind the headlines to bring you the insights and implications that count.

'WORLD' EVERY DAY.

FINANCIAL REVIEW

SHARPEN YOUR VIEW.

WATCHDOG

ROUND THE WORLD TRIP

GLOBAL BRANDS MAKE US FEEL SAFE WITH THEIR MASSIVE FINANCIAL RESOURCES AND CUSTOMER SERVICE WORKFORCES. BUT WHAT HAPPENS WHEN A COMPANY IS SO BIG, YOU GET STUCK IN A NEVER-ENDING INTERNATIONAL SUPPORT LABYRINTH?

Dear *Watchdog*,
I always believed the hype about buying brand name computers until I bought a Compaq with one of those "International Warranties" . . . It was November 2000, and I'd been living in California for nearly three years when I was given a sales pitch about Compaq's worldwide network of service centres that would fix any problem — no matter where I was posted. I decided to buy a Compaq Presario notebook. I was posted back to Australia a few months later and suddenly my Compaq stopped dead. "No worries," I thought. "I've got a brand-name product with a valid warranty". How naive was I? Compaq Australia advised me to contact Compaq USA, who told me to go to Compaq Australia who said to go back to Compaq USA. It's been months now and I can't get anywhere with these guys.

Paul Scherr
St. Ives, NSW

Compaq kept assuring Paul his warranty was valid, but each branch expected the other to fix it. Meanwhile, his job liaising with the US armed forces had wrapped up and his commanding officers wanted him close to home. Back in Sydney, the

overseas phone bills were starting to bite. "It's not so much that they refuse to honour the warranty, it's just that they keep kicking me from the US to Australia and back."

Watchdog tried to help Paul cut through the red tape, but Compaq had no intention of bending its bureaucracy. Here's all they had to say.

Dear *Watchdog*,
The international warranty on standard Compaq Presario notebooks was introduced in February 2001 and backdated to all units manufactured from 1 January 2000. From our records, Mr Scherr's notebook was manufactured in June 1999, and regrettably, is not covered under the programme. It therefore comes as a surprise that Mr Scherr purchased a Presario notebook under the impression he had international warranty six months before the programme was introduced.

The literature that accompanied the notebook would have stated the extent and limitations of the warranty provided. However, if he received verbal information that a Presario notebook manufactured prior to 1 January 2000 had an international warranty, then it

TALK TO US

HAD A RAW DEAL? STUCK WITH A LEMON? WATCHDOG IS HERE TO HELP, SO TELL US WHAT'S HAPPENING TO YOU.

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Include your full contact details and product information. All correspondence becomes the property of APC and is subject to editing.



is of concern to us. There is precedent for US retailers offering international warranties which are supported by third parties, in which case Mr Scherr would need to contact his retailer or the relevant third party. In any event, we will be passing this information on to the relevant channel managers in the United States.

Jeff Morris
Presario Notebook Product Manager
Compaq Computer Australia

"This is classic Compaq-speak", said an exasperated Paul when he saw the letter. "I don't particularly care when my laptop was manufactured, I purchased it new in the box. The vendor not only indicated the warranty would be valid in the US and Australia, but Compaq USA and Compaq Australia have been saying the same to me over the phone."

Paul certainly bought the notebook during the period the international warranty program was valid, but Compaq seem more concerned about when it came out of their factory. Although Jeff wasn't prepared to fix Paul's notebook, but did offer "to direct him on the avenues open to him". Paul didn't relish stepping back onto their bureaucratic treadmill and racking up more overseas phone bills talking to the same unhelpful support staff. He took the notebook down to his local repair shop. "Turned out to be an internal power supply problem. And no, I'll never buy another Compaq." ■

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STANDOVER TACTICS?

I thoroughly enjoy every issue of *APC*, but I'm worried that you guys could now be gagged by new legal agreements. A news report stated that Network Associates has introduced an End User License Agreement (EULA) that requires you to get their consent before publishing reviews of their products or disclosing the results of tests comparing their products against the competition. Can you tell me whether there are any popular software products in Australia today with similar EULA terms, and how this will affect your magazine when publishing reviews now or in the future?

Harry Papantoniou
Belmore, NSW

No-one's tried this on us and we'd tell them where to go if they dared!

GATOR ALERT

With computer security such a big issue (*APC* April, page 56), I make a point of keeping only purchased and licensed software on my work PC and keeping it free of "dirty" software. But I can't seem to stop an incessant advertising program called Gator. I emailed Gator and they replied had agreed to the installation of their software when I downloaded a particular program. This may have been the case on the first occasion, but since then I have never just blindly clicked through the install process. Now I discover it's impossible to uninstall Gator without completely uninstalling the program it came with first. I now keep clear of any product that is connected to Gator, all *APC* readers should too.

Chris Kelly
Nambour, Qld

SOLD OUT?

I picked up the March and April issues and turned straight to the Linux section. Imagine my horror when I flip through Workshop and can't find Linux anywhere. What's going on? Have you sold out to Microsoft? Say it isn't so.

Csaba Veres
Canterbury, Vic

We haven't "sold out" Csaba, we simply ran out of space. You'll be happy to know that Linux is back this issue.

SMOOTH RUN

I read with dismay your story about Tim Pienaar's battle to reactivate his "lawful" copy of XP (*APC* March 2002, page 16), and dreaded the time I would have to do the same. Sure enough, when I replaced a dead SCSI card and installed a new CD-RW drive, I was blocked from using my PC. I didn't feel I should have to reactivate, but I didn't have a choice. To give Microsoft their due, it took only 15 minutes and I was back up and running. We all like to knock Microsoft, but they didn't give me the third degree. I hope I'm that lucky next time . . .

Sean Pasley
Glenmore Park, NSW

SLEEPING GIANT

The principles behind the disgusting episode undergone by Tim Pienaar when he tried to Reactivate Windows XP are precisely what I've been trying to warn *APC* about for some time. My letter of the month (*APC* January 2002, page 72) argued that all operating systems should be open source while applications developed by particular companies remain

closed source. This philosophy renders Product Activation irrelevant. I can't wait to see what happens when the first large wave of home upgraders hit Microsoft, because most of these users don't have Tim Pienaar's IT training and won't be able to explain the alterations in their PCs. Product Reactivation could be the "sleeping problem" that ultimately forces many people to walk away from Windows.

Dr Tony Young
Blackbut, Qld

XBOX, YBOX, WHYBOX?

Your "Xbox Xposed" (February 2002, page 74) article was very informative, but I was disturbed by your "Ybox" prediction. Many people complain that the Xbox can't be upgraded, but this really misses the point. The Xbox is not a PC-in-a-box; it's a gaming console. There is no place for variable hardware in the console gaming community. From a developers standpoint it's the fixed platform that makes console games a joy to make. When you push a particular console to its limits, you know you've created software that the entire community can enjoy to the full extent. I urge anyone who falls in love with

HAVE YOUR SAY

We welcome comments and suggestions. Send correspondence to:

epinions, APC, PO Box 4088, Sydney NSW 1028, or email apc@apcmag.com

Letters can also be submitted online at **apcmag.com**. All correspondence becomes the property of APC and is subject to editing.



Xbox to always remember what it really is — a gaming console. If the PC community knows what's good for it, they'll stick to their Xbox emulators.

Brad Ollis
Geelong, Vic

IN HAND

I read the "Handhelds Superguide" (APC February 2002, page 44) with great interest. It showed a balanced view of the products available for Palm and Pocket PC. My main interest is whether I could replace my notebook with a handheld. You covered the word processing and remote access issues, but you didn't mention anything about the capacity for PowerPoint

presentations with embedded video clips. Any alternative to carrying a notebook around is worth investigating, so please keep us up-to-date on developments in this area.

James Hurnall
Hatton Vale, Qld

Hang on to that notebook James, handhelds such as Sony's new Clie have fantastic video capabilities, but they're still a long way off replacing your notebook. Using PowerPoint on a handheld for still presentations is fine, but embedded video clips have low frame-rates and are glitch-prone and external VGA attachments can also be expensive.

LETTER OF THE MONTH:

Your article, "Adrift on the Wireless Web" (APC February 2002, page 20) was quite misleading. It showed the trials and tribulations of a bloke on his boat trying to use Telstra's wireless service. In fact, rather than being a wireless connection, he was merely using a dial-up service over a GSM phone in exactly the same fashion as you would from a home phone line (only with a mobile access number). Yes, I know there were no wires, but the term "wireless" really refers to new (high-speed) data transfer technologies such as IEEE 802.11 and Bluetooth. Telstra cops a lot of flack from APC (rightly or wrongly) but in this case, telcos are stuck with less-than-perfect solutions because high-speed wireless is not sufficiently developed or deployed in Australia.

Andrew Dell
Narrabundah, ACT

ANDREW WINS A COPY OF Microsoft Office XP, with the latest versions of Word, Excel, PowerPoint and Access.



THIS MONTH'S PRIZE

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SHORT SIGHTED

THE PENTIUM 4 HITS THE ROAD . . . BUT FOR HOW LONG?
HEAT PROBLEMS, POWER CONSUMPTION ISSUES AND
MORE POWERFUL TECHNOLOGY NIPPING AT ITS HEELS
ALL SPELL A SHORT LIFESPAN FOR PENTIUM'S FLAGSHIP
MOBILE PROCESSOR.

The Pentium 4 mobile processor (Pentium 4M) has been unveiled 15 months after the release of the desktop model, and although it brings a high level of performance to a mobile platform, it has its flaws. Intel is maintaining production of the cheaper and less power-hungry Pentium IIIM CPUs while working on a new mobile chip called Banias, which is slated for release in early 2003.

GOING BANIAS

The Pentium 4M seems to have been released to fill a gap between the Pentium IIIM and Banias processors, and as such has a limited

future. The Banias is reported to have more processing power and lower energy requirements than today's mobile processors, and will supersede the Pentium 4 mobile next year.

Essentially the P4 mobile chip is the same as the Pentium 4A (Northwood) desktop engine, but with a few additions to the power saving features to make it more suited to a mobile environment, and with an extra pin on the CPU.

The mobile CPU shares the desktop version's 512KB Level 2 cache, NetBurst architecture and 400MHz bus, but in a less power-hungry package. The new chipset for the P4 mobile is the i845MP, which provides support for 4x AGP and up to 1GB of DDR SDRAM. At first glance, the specifications make the Pentium 4 mobile a desirable CPU for notebooks, but after taking a closer look you may find it's an illusion.

DEEP SLEEP

The power-saving features of the Pentium 4M are almost identical to those of the Pentium IIIM processors, with a "Deeper Sleep Alert State", which enables the CPU to be powered down almost completely yet still maintain a current to crucial circuits to accelerate the "waking up" process. This means that the PCs using the Pentium 4M can be set on standby for longer than Pentium IIIM models, but doesn't translate into any real-world performance or battery life increase. Enhanced SpeedStep is also a new feature which enables the CPU to control performance based upon the demands of the software being executed as well as cut back system speed to save battery life.

The production schedule was originally delayed because the initial designs of the Pentium 4 core was too power hungry for a mobile PC. It wasn't until the die size was shaved down to 0.13 microns that a mobile Pentium 4 chip became feasible and power requirements were cut — but not far enough.

TOO HOT TO HANDLE

The 1.2GHz Pentium III mobile is specified with a thermal design power rating of 22W, while the TDP of a 1.7GHz Pentium 4M is 30W. The cooling requirements of the Pentium 4 are approximately 30% greater than its ancestor, which raises the importance of designing intelligent and effective cooling systems for mobile PCs. Current high-end Pentium 4M notebooks like Toshiba's Tecra range use water-cooling systems to combat high CPU temperatures.

The Achilles heel of the Pentium 4 is really its high power consumption. It draws more current than both the current level Pentium III mobile processors and the upcoming Banias processor, and this will be the root of the Pentium 4's fate. Because of its cooling and power requirements, expect to see the Pentium 4M in bulky desktop replacements, but small notebooks will make use of the Pentium IIIM — at least in the near future.

Matt Overington

Toshiba Satellite Pro 6100

The Toshiba Satellite Pro 6100 uses the GeForce4 440 Go with 64MB of RAM, which provides 3D benchmark scores comparable to many desktop GPUs. At the heart of the Satellite is a 1.6GHz Pentium 4M CPU, and 256MB of DDR SDRAM, so it screams along when running applications as well as for playing games, watching multimedia presentations or even DVDs.

The Satellite runs in a native resolution of 1,024 x 768 pixels, which looked decidedly low-res next to the offerings from Dell and IBM. The Toshiba's keyboard was outstanding, with each key giving positive feedback to the touch.

Given the heat problems associated with the Pentium 4M CPU, the Toshiba remains surprisingly cool during operation. The top of the keyboard around the hand rests remains especially cool, which makes the machine more comfortable to use for long periods of time.

The build of the Toshiba is extremely robust, although we were concerned about the hinge between the LCD screen and the

body as it tends to flex. Although this wasn't a problem in our labs, we imagine that real-world use-and-abuse could lead this pivot to become damaged over time.

In benchmarking, the Toshiba sped along amiably, gaining a lot of ground in the office productivity tests for SysMark 2002. The Toshiba also benchmarked the fastest in memory bandwidth and hard disk tests, despite the fact that it has a slower CPU than the two other PCs we looked at.

Contact Toshiba

Online www.toshiba.com.au

Phone 1800 021 100

Price \$5,500

Verdict ●●●●○



IBM ThinkPad A31p

The keyboard of the IBM A31p is extremely well laid-out, with a row of shortcut keys within reach of the left pinkie finger to facilitate quick access to email and browsing functions. Noticeably, however, there are no Windows keys included on the IBM.

One area where the IBM excels is in ways to get data in and out of the machine. The A31p features 802.11b, Bluetooth and Ethernet connections in addition to USB, parallel, serial and FireWire ports, two PC card slots and S-video in and out.

The IBM was the only laptop not fitted with a GeForce4 Go graphics processor — instead IBM opted for an ATI Mobility FireGL, which provides extremely comparable graphics performance to the NVIDIA chip in the Dell and Toshiba units. The ThinkPad's screen runs in a native resolution of 1,600 x 1,200 pixels, which is enough for high-end graphics work, and the frame-rates generated by the ATI chip are more than adequate for 3D gaming.

A number of clever little add-ons to help make it an attractive desktop replacement, like an option to add a numeric keypad or a built-in cradle for IBM WorkPad PDAs.

The IBM is a comfortable laptop to work on thanks largely to its high resolution screen, solid keyboard and responsive configuration.

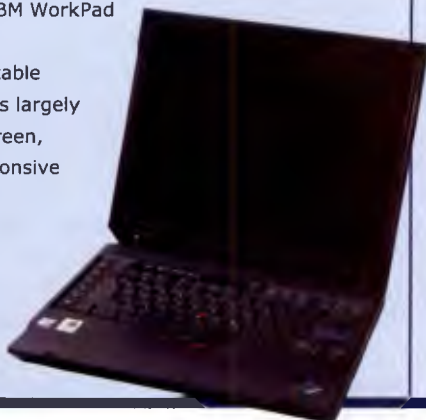
Contact IBM

Phone 132 426

Online www.ibm.com.au

Price \$7,499

Verdict ●●●●○



Dell Inspiron 8200

Where the Dell 8200 stood above the other Pentium 4 notebooks was in the realm of video performance. The Inspiron enjoyed the fastest video benchmarks of the three computers, but was also the slowest of the machines under office productivity tests.

For its graphics system, the Dell relies on the new GeForce4 440 Go with 64MB RAM. NVIDIA has done a lot of work on shrinking its desktop GPUs into a form that will work for mobile computing: the current GeForce4 440 Go processor is approximately the same size as a postage stamp, and it delivers extremely impressive performance — especially for a mobile PC.

You can navigate the pointer using either the touchpad or the eraser-head, and although the buttons don't have enough vertical travel to give a satisfying click, they are enormous and are easy to strike.

The Inspiron included all the features that we'd expect from a modern desktop replacement, such as 802.11b wireless support and a FireWire port. The screen was also up to scratch, and ran in 1,400 x 1,050 pixels natively.

Unfortunately the Dell was the hottest laptop we tested, and placing your hand near the exhaust vent for too long proved uncomfortable; people looking to use the A31p while travelling may need a heat-proof lap!

Contact Dell

Phone 1800 812 393

Online www.dell.com.au

Price \$5,599

Verdict ●●●●○





TREOMPHTANT

PALM OS MEETS MOBILE PHONE: IS THIS THE BEST OF BOTH WORLDS, OR A CASE-STUDY IN COMPROMISES?

The Treo 180 is Handspring's make-or-break model. Designed as an all-in-one wireless communicator device, it has to succeed where others have failed. Making a successful phone/handheld/Internet client hybrid is no easy task. Most attempts to date have been from mobile phone companies where lack of experience in designing a large-screened user interface and handheld operating system were painfully evident.

Handspring is an entirely different proposition. Started by Palm Computing founders Jeff Hawkins and Donna Dubinsky, its focus has always been on form factor and ease of use. Thankfully, if the Treo is any indication, that focus remains unchanged. Handspring's Palm-like Visors were primarily low-risk

interim products to raise enough revenue for the development of a wireless handheld — and now it's finally here.

Unlike the Palm VII which required the user to sign up to a dedicated service (not available in Australia), the Treo incorporates a dual band GSM-based phone, which means it can access 71% of the world's digital market in 174 countries including Australia. A small compartment at the back accommodates a standard SIM card, and a short antenna protrudes from the top, but otherwise the Treo looks like a regular handheld. In fact, the Treo has the smallest footprint of any Palm-based handheld; the added thickness mostly due to its bulky hinge for the flip-up cover.

Being a device designed for composing SMS and emails, the

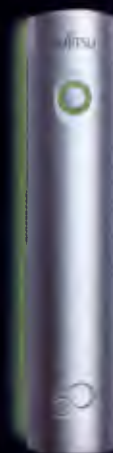
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Treo is also the first Palm OS-based handheld with a built-in QWERTY keyboard. A Graffiti model called the 180g is available alongside the keyboarded version, but that defeats some of the Treo's more clever ergonomic features. This includes a fast phone book look-up feature that requires you to only key in the first initial of a contact's name followed by the first few letters of their surname. Depending on how many similar names you have in your phone book, you can generally reach the right number within four key presses.

The Treo 180 has also been designed with one-handed operation in mind, much like the way you use a mobile phone. The 180g Graffiti version would require you to pull out the stylus more often and use both hands. Thus, the keyboard is superior in many ways — but not without its failings. The individual keys, as you can expect of a device this size, are tiny and tightly spaced which will prove a frustrating experience for those with chubbier fingers. While I personally didn't have much difficulty with the keyboard, it still took a little time to become accustomed to it and begin typing relatively proficiently.

Below the keyboard are buttons more familiar to any Palm or Handspring user. These are the four buttons for jumping directly to the built-in applications with an extra two in the middle for scrolling up and down the screen. On the Treo, two of these shortcut buttons have been modified to launch the Blazer Web-clipping browser and SMS applications by default instead of the To Do and Memo functions. A blue key on the keyboard has been added to work like a function key for accessing the numeric keypad and symbols.

The phone portion of the Treo has four views, the default for which shows 10 customisable speed dial buttons onscreen and activates automatically when the protective flip lid is opened. Another screen mimics a regular phone's keypad for manual dialling. As the Treo runs on a modified version of Palm OS 3.5, most functions and conventions will be intuitively

familiar to Palm users. Another handy feature is that when you're on a call, the screen changes to display other options, one of which gives you the ability to switch to hands-free speakerphone at the tap of a button.

Because of its small form factor, no expansion slots are provided, snap-on Springboard expansion module or otherwise, which means you're pretty much stuck with its standard configuration. Any accessories will have to connect via its HotSync connector. The 33MHz processor and 16MB of memory are straight out of the Visor range and, not surprisingly, the Treo performs similarly. Its 160 x 160 monochrome backlit screen measures only 70mm diagonally, and looks even smaller without the Graffiti area, but is an acceptable trade-off for the small form achieved by the Handspring team.

At first I was sceptical of the Treo. Having tried many hybrid devices in the past, all were either clumsy or unwieldy, or they compromised too much in usability for the sake of size. The Treo however, strikes a fine balance between size, weight, features and ergonomics. It is a communicator that you actually won't mind carrying around with you in your shirt or trouser pocket rather than in your briefcase. Although it's not perfect (sound quality in both the speaker and the supplied headset leaves much to be desired), it is without a doubt the best example of a hybrid device conceived to date.

Simon Tsang



Contact Handspring Australia

Phone 1300 765 005

Online www.handspringaustralia.com

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Verdict ●●●●○

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BOLD AND THE BEAUTIFUL

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apc
EDITOR'S
CHOICE
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2002

It may not look it, but the new Lumix DMC-LC5 is Panasonic's bold step towards staking its claim as a serious player in the digital camera space. Although not traditionally strong in its digital still camera offerings, Panasonic has made a concerted effort to avoid the "me too" syndrome in its new Lumix line-up.

Partnering with world-renowned German lens and camera manufacturer Leica is a good way to start. The entire Lumix range, consisting of four models, all feature lenses manufactured by Leica — even the entry level DMC-F7 starting at \$1,099. The flagship LC5 however, is where Panasonic's expertise in electronics and Leica's proficiency in optics come together to make one stunning four megapixel machine.

The Panasonic LC5's understated cast metal casing isn't unlike Leica's own camera range, with a hint of the classic drop-shouldered look used to good effect. The entire design is more like its film-winding cousins than the CCD pack, and it is likely this was deliberately done to appeal to the

enthusiasts. It also operates very much like a 35mm film camera, with a simple mode dial to switch between single, continuous and video shooting. A dial next to the lens barrel allows you to select between auto/manual focus and macro mode.

Getting straight to the important aspects, image quality is absolutely superb — in fact, astounding. When you get frame after frame of near-perfectly exposed shots in difficult mixed lighting conditions, you know that you're either doing something right, or the camera is simply doing a brilliant job. Though I'd like to imagine otherwise, I think in this case it has more to do with the latter.

Although an optical viewfinder is fitted, there's little reason to use it thanks to the Lumix's large 2.5in LCD screen. By comparison, most other digital cameras on the market — high-end included — only incorporate a 1.8in display. The large screen's versatility is also enhanced by a supplied plastic fold-out hood that attaches itself through the tripod mount. This shields the display under strong lighting conditions so you can still see what's on the screen.

Another standout feature of the LC5 is the speedy start-up and shutdown times. A sore point on most digital cameras, I



The Lumix DMC-LC5's unusually large 2.5in display almost makes the optical viewfinder obsolete.

rarely missed a photo opportunity with the LC5 in situations where other cameras would've left me waiting for the camera to "boot". The battery life is also impressive, lasting well beyond the number of shots you can take on the supplied 32MB SD card.

The only criticism we have is the absence of any serious lens protection. Although the lens retracts behind the focus ring collar, there's nothing to prevent you from smearing the lens with your finger or worse, damaging it. A simple lens cap would have done the trick.

In every other respect, the Lumix DMC-LC5 can't be beat. Large screen, high quality, rapid response and long battery life — all the makings of a great digital camera. We have a frontrunner for this year's APC Technology Awards.

Simon Tsang

Contact Panasonic

Phone 132 600

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Verdict ●●●●●

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MINIDISC MEETS MP3

THIS FIVE-STAR PLAYER LOSES TWO POINTS FOR ITS NAZI-LIKE COPY PROTECTION.

It seems Steve Job's vision of the PC becoming a digital hub has gained another supporter in Sony. Ironical then that its new Net MD Walkman, which is supplied with a USB docking cradle for connecting it with a PC, ships with Windows-only software.

That aside, the Net MD represents just the kind of device that quashes arguments that the PC is dead. Rather, digital devices will increasingly rely on the brains and capacity that a desktop PC or notebook has to offer. The new Net MD Walkman adopts a PDA-style cradle that both charges the player and links it to a PC via USB.

Once the supplied OpenMG Jukebox software is installed on the PC, docking the Walkman lets you transfer music to the player. The OpenMG software works like most other MP3 jukebox style interfaces and can automatically search for all existing MP3, WMA or WAV tracks in your PC's hard disk. The process is then simply a matter of checking the music in or out of the player. Any music that gets checked out — that is, downloaded to the Walkman — is automatically converted into Sony's own ATRAC3 format on the fly.

It uses this as a means of ensuring a level of digital rights protection so that you can't check-in, or upload, music to a PC that didn't originally have the file. The software allows you to check-out a track up to three times before it locks you out altogether. You then have to check the track back in before any more transfers to the Walkman can be made.

Confused? You're not alone. Apart from taking over your music collection and tagging it with the check-in/check-out system, the whole process still does little to prevent the online distribution of MP3s, which is where all the piracy occurs. So not only is the system artificially more cumbersome to use, it's also ineffectual.

OpenMG also facilitates the ripping of CDs directly to the player without having to store it on the PC first. It would be handy to be able to rip recordings of interviews and lectures, directly back into the PC, seeing as the connection is already there, but that is not an included function.

The Walkman itself is an impressive piece of work and adopts a simplified control panel for basic playback functions. The MZ-N1 has one five-way button that pushes down, rocks back and forth, up and down and controls fast forward, rewind, play, pause and stop — a mighty impressive display of consolidation. And Sony's signature jog-dial brings up various menu options on the backlit LCD screen. A tethered remote "LCD stick" also provides access to playback functions.



The cradle eases the burden of transferring music from your PC to the Net MD.

The audio is incredibly crisp, especially if tracks are ripped directly from a CD. An optical TOS link cable is supplied to hook up to optical outputs such as those out of hi-fi systems. Tracks converted from MP3 or WMA sources are noticeably inferior and sound flatter in tone, but still markedly better than most MP3 players.

Playback and recording can be lengthened using the MZ-N1's long play feature that can extend an 80 minute MiniDisc to either 160 or 20 minutes. Housed in a cool, lightweight magnesium casing, the MZ-N1 is the latest item to fit into the lustware category.

Simon Tsang

Contact Sony

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Online www.walkman.com.au

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Verdict ●●●○



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host computer. 2. Based on in house tests using ISO criteria. 3. Some features are not available on all machines. For more information please call Canon on 1800 021 167, or visit our website www.canon.com.au Specifications are subject to change without notice. Canon Australia Pty Ltd ABN 66 005 002 951. CS0893



HOLD THE PHONE

THE NOKIA 5510 HAS PLENTY TO TEMPT THE MESSAGE-MAD SMS CROWD BUT BEFORE YOU BUY, LOOK CAREFULLY AT WHAT'S MISSING.

Nokia all but invented the concept of the mobile phone being marketed as a lifestyle accessory, and their 5510 handset is the ultimate expression of that philosophy. This rather hefty handset incorporates a digital music player, an FM radio, an SMS-friendly keyboard and direct USB connection to your PC. And if you're really desperate, it works as a mobile phone too.

The small buttons of the split keyboard require careful tapping and, at first, patience as your SMS typing speed drops to novice levels while getting used to individual keys for each character. More pedestrian uses for the 5510, such as dialling a number, can be a chore because the extended keyboard requires two fingers or thumbs to operate, rather than being able to peck out a number with a single thumb.

Other SMS tricks include templates and a quick-pick menu of smiley symbols. It's disappointing, then, that the 5510 uses the same display as most other Nokia handsets, limiting it to four lines of SMS text. The handset also includes a digital music player with 64MB of built-in

memory — enough for up to two hours of music, but as the 5510 doesn't use drop-in memory cards there's no way to change your choice of music on the move.

And your collection of MP3 tracks will need to be converted into the copy-protected LSE format (a variation on AAC) before they can be played on the 5510.

The bundled Nokia Audio Manager software does this automatically, and can also rip CDs directly into LSE, before shutting them onto the phone.

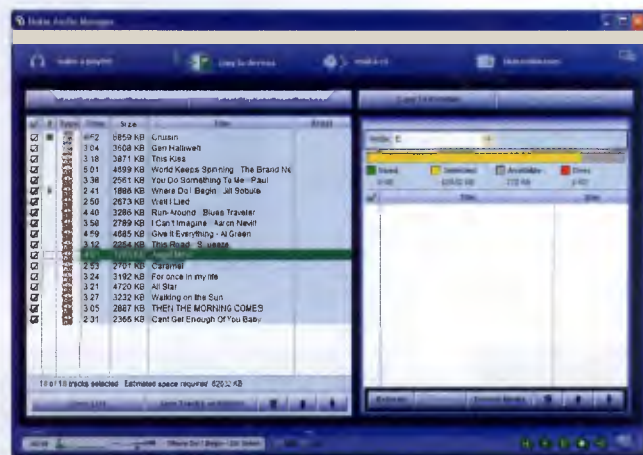
Either way you'll eventually end up with a hoard of LSE tracks, wastefully duplicating your MP3 library.

Why Nokia couldn't have settled for MP3 or WMA is anyone's guess.

The audio quality was quite crisp through the supplied headset (the music fades out when a call arrives), and easily enhanced with equaliser presets ranging from classical to a thumping "extra bass" setting.

A particularly cool yet undocumented feature of the 5510 is that its 64MB of RAM can store any type of file.

Plug it into Windows XP and it's detected as a standard removable storage device, so you could conceivably use it to carry documents and pictures to be uploaded onto another PC,



Nokia's Audio Manager software: nice interface, shame about the file format.

provided you also pack the lightweight USB cable.

Despite all that it offers, the 5510 has several shortcomings guaranteed to cool some passions. At 155g and roughly the size of a spectacles case, it's beefier than most modern phones and too big for most pockets. There's no infrared port, an omission which rules out linking this phone to your notebook or handheld, and the back cover has a decidedly wonky fit and far too much flex.

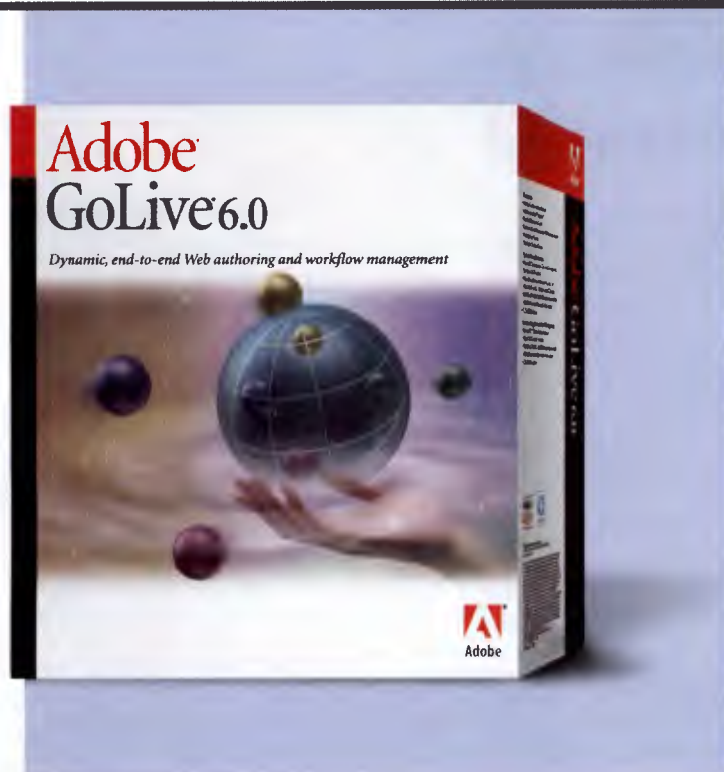
David Flynn

Contact Nokia Australia

Online www.nokia.com.au

Price \$689

Verdict ●●●○○○



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Now in its sixth incarnation, GoLive is a very cool offering featuring a suite of tools for the amateur through to the large corporate Web team. GoLive 6 allows you to create content with hand coding, visual layout tools, or a combination of both. Bundled with a free workgroup server as well as mobile device emulators, it's a top package.

GoLive offers several different page editing views, including a visual split-source mode that allows for visual and code editing simultaneously. To simplify the creation of pages, an Objects palette is provided with a wide range of pre-built code objects. GoLive 6 has editors for Cascading Style Sheets (CSS), JavaScript and DHTML timelines. Templates are also supported, with the ability to make master pages with editable regions.

Preview mode provides an approximation of what the current page will look like when viewed in a browser. A list of view profiles is offered, including several versions of IE and Navigator, as well as mobile devices like DoCoMo i-mode phones and the Nokia XHTML phone. This feature is very useful for previewing CSS code in older browsers, without needing to have the browsers actually installed. You can also preview your pages in the real thing using the Preview In command.

Site management is equally solid. Sites can be created from scratch, or imported from an HTTP or FTP server. The Site Import wizard is smooth and easy to use, as is the Dynamic Site wizard. GoLive supports the creation of dynamic sites using ASP, PHP and JSP. It works in concert with your Web server to support scripting and database access, saving a lot of time usually spent uploading and testing various iterations of a page.

As an Adobe product, GoLive is heavily integrated with the company's other major products, such as LiveMotion and Photoshop. The Smart Object feature allows custom images and Flash Movies to be generated from a single source document. Just drag-and-drop a LiveMotion file onto the page for instance, and a customised version can be generated without leaving the GoLive application.



The Site Wizard guides you through the process of importing or mounting an existing site, or creating a new one from scratch.

The big news in GoLive 6 is the Adobe Web Workgroup Server. This free server handles tasks such as versioning control, multi-user access, backups and code version comparison. Running the server on a networked machine allows distributed team members to log in to the site, check files in and out, and even see who else is currently working on particular assets.

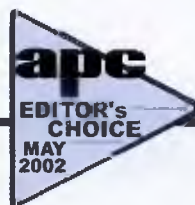
GoLive is a very strong product out of the box, but you can also download extensions in the form of scripts, components and modules from Adobe's Xchange site. A Module Manager is provided, making it easy to switch extra features on and off.

GoLive 6 is available for Windows, Mac and Mac OS X. A trial version is also available from Adobe's Web site. The separate phone emulators provided by DoCoMo and Nokia will only run on Windows systems.

David Emberton

Contact Adobe
Phone 1300 550 205
Online www.adobe.com.au
Price \$1,049 (upgrade \$239)
Verdict ●●●●●





AG Neovo S-19

THE EYES HAVE IT

You may not be surprised to learn that many people spend in excess of 40 hours each week looking at the computer screen.

Given that your monitor is the window to your PC, it stands to reason that at least half of your computer budget should be reserved for buying a good one. The current dream-screen is a high-end TFT and the Neovo's on the top of the heap. The Neovo S-19 has

a massive viewable area of 19in and a native resolution of 1,280 x 1,024 pixels. It's beautiful.

The face of the screen is comprised of a single sheet of H6 hardened glass. The Neovo passed our vigorous scratching tests, and even withstood being walloped with the edge of a teaspoon. Because of the 2.8mm layer of reinforced glass on the front of the monitor, the Neovo is quite heavy for a TFT monitor (around 8.5kg).

Although the front of the monitor is a single flat pane, initial concerns about glare and reflections were unfounded due to the Neovo's very effective anti-glare layer.

The Neovo features a range of inputs, including VGA D-sub, DVI-I and TV-in so you can use the monitor as a regular digital TV. By far the best video interface in terms of quality is the DVI-I format. Because the connection is digital, there is no degradation in signal as it is transferred from the PC to the monitor. DVI-I is emerging as the future video standard for PCs, and is already being adopted by a number of video card and monitor manufacturers.

The only thing that's hard to live with is the price tag, but bearing in mind that hardened, glare-proof glass is not cheap and that the Neovo is built to last, it is one of the best monitors I've ever seen. Where was the S-19 when I was wrecking my eyes on bad monitors in my youth?

Matt Overington

Contact Camcom International
Phone (02) 9418 8888
Online www.camcom-international.com
Price \$4,598
Verdict ●●●●●

Hyundai ImageQuest L80A



TV STAR

Despite being spoilt by the appearance of the new wave of TFT screens (such as the Neovo S-19 reviewed above), the Hyundai L80A is an extremely impressive monitor, its PC-beige appearance notwithstanding. Next to most other contenders, the Hyundai shapes up well.

On the back of the Hyundai is a four-port USB hub, and although it's a benefit having a USB hub attached to your monitor, the ports are not immediately accessible. Hyundai — like most other monitor manufacturers — has chosen to place the USB ports on the rear of the screen, making it as difficult as reaching behind the PC to add devices.

After looking at the 19in Neovo monitor, we immediately spotted a few flaws with the Hyundai panel in terms of image clarity. On a TFT monitor each screen pixel is comprised of three

light-emitting transistors, so each pixel is clearly defined. As a result, TFTs tend to display jagged diagonal lines, and the Hyundai suffers mildly from this trait.

Where the L80A is a winner is in terms of inputs. Connections are available for VGA, DVI-D, S-video and even analogue, so you can also use the Hyundai monitor as a television.

The Hyundai has an 18in viewable screen area, and runs in a native resolution of 1,280 x 1,024 pixels, which helps native text to be large enough to avoid myopia. The dimensions also make the monitor comfortable to use for watching television without having to squint at the screen.

With the ImageQuest L80A, Hyundai has joined the ranks of the more elite monitor makers by designing an excellent TFT monitor able to stand toe-to-toe with the likes of Sony.

Its vivid colour reproduction and inclusion of myriad connection options helps make the Hyundai stand above similarly priced TFT screens.

Matt Overington

Contact Hyundai
Online www.hyundaiq.com
Phone 1300 880 038
Price \$2,599
Verdict ●●●●●

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DESKTOP DELIVERANCE?

While it's hard to imagine Microsoft ever challenging Apple in terms of aesthetics, nobody can deny that Redmond is making a concerted effort to get the PC desktop working more efficiently. The latest effort, the Microsoft Wireless Desktop, swaps a pair of cables for a bit more radio traffic in the ether — a fair trade by any definition.

Once setup, situating the keyboard a conventional distance (within one metre) from the receiver unit results in typical performance for desktop applications. As distance increased, so did the delay between typing and seeing the results. One problem presented itself while we were playing certain games — the keyboard continued to register keypresses even though we weren't touching the keyboard at the time. A quick tap of a couple of keys solved the problem, however it is definitely a recurrent and somewhat disconcerting issue.

The mouse's symmetrical casing sports five buttons that are quite narrow and fiddly, making

use rather unintuitive. Thankfully, clicking the mouse buttons while moving doesn't result in inconsistent pointer movement. How much of this can be attributed to Microsoft's technical genius is unsure, as the mouse is not optical, but rather a ball mouse. This helps lower the price, but does make the package a retrograde step for an optical mouse user. Further, current technology restricts a wireless mouse to a maximum refresh rate of 50Hz. USB mouse users or those who are used to a mouse refresh rate of up to 200Hz will find the pointer movement comparatively "flickery" and less smooth across all applications and games.

While hardcore gamers or people who cannot countenance a mere double-digit mouse refresh rate won't necessarily find the Wireless Desktop to their tastes, Microsoft is aiming more for the average desktop application user. To this market, the competitive pricing paired with the freedom on offer is likely to make the wireless desktop a practical option.

Justin Kranz

Contact Microsoft
Phone 13 20 58
Online www.microsoft.com.au
Price \$149.95
Verdict ●●●●○

Kensington Expert Mouse Pro Wireless



MOUSE MASTER

There are three types of computer users in this world: mousers, trackballers and mousers who've never tried a trackball.

The decision to trackball comes after a lifetime of coffee-stained mouse mats, cramped desktops, stalled wheels and jittery optical mice. Once you're past those first awkward baby-spins on your trackball, no face-first mouse will ever live up to the same precision.

Using the Kensington Expert Mouse Pro Wireless is like building an extension onto your keyboard. The large, flat four-point button array is topped by six shortcut buttons usually reserved for keyboards. Use them to switch between your favourite applications and work on parallel projects or program in your Web pages using Kensington's MouseWorks software.

The over-sized ball is a fantastic tactile experience for artists and gamers who crave more control over their domain. Drill down to the last

pixel without stalling or skipping, or keep it on your couch armrest and manage your home theatre. The wireless receiver has a radio frequency that lets you venture a safe six feet away, or a less reliable ten feet (be prepared to replace the two AA batteries).

It doesn't have the smooth optical spin of the Microsoft Trackball Explorer and the heavy dark blue lift-out ball records every fingerprint. Unlike the elevated ball in the Logitech TrackMan, the large hole is a magnet for dust and rings of grime coated each steel bearing by the end of the first week.

Yet the Expert Mouse Pro Wireless has a distinctive style. Big hands won't cramp on the huge 12.7cm wide and 18.3cm long tilted face (and that's before you attach the plastic wrist rest) and graphic designers will cruise through projects with the extra customisation and control. However, you still have to lift and stretch your middle finger to reach the wheel, so it's a poor choice for Web surfers, document scrollers and dainty hands. You'll have to try this one on to discover if it fits.

Fiona Angus

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Online www.accpaust.com.au
Price \$199
Verdict ●●●○○



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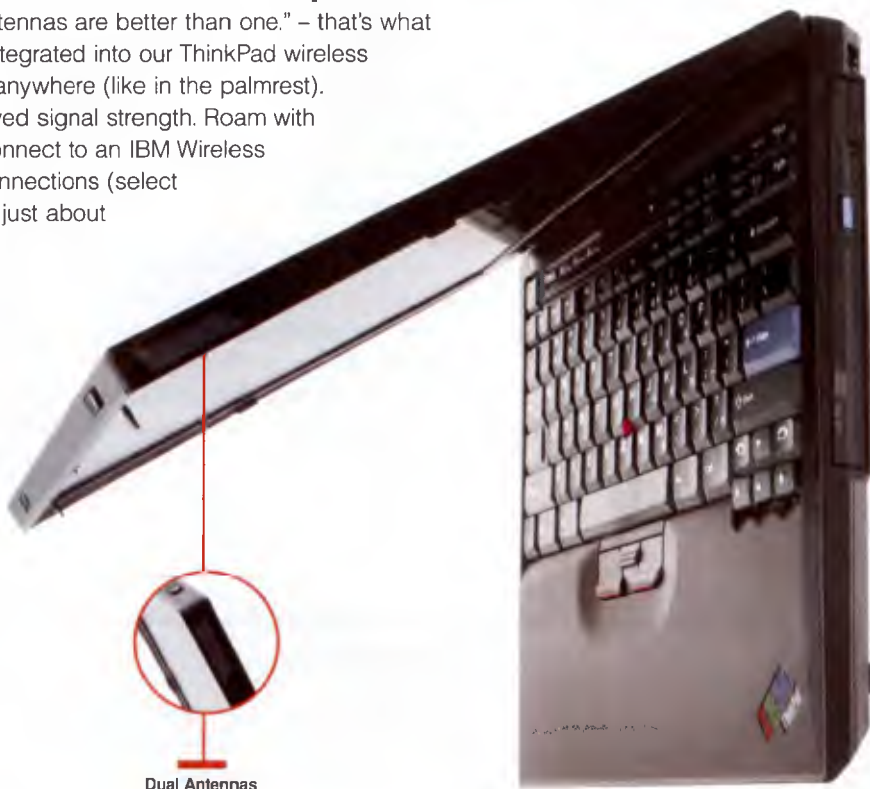
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3D Prophet All-In-Wonder Radeon 8500DV

ALL HAIL THE PROPHET

With all the video interfaces today (analogue and digital) and the various ways of getting a signal in and out of your PC, it was only a matter of time before the All-In-Wonder was released. With an ATI Radeon 8500 chipset and 64MB of DDR RAM, the Prophet screams along for gaming and graphics work, but it's the extra functions that are worth the investment.

The card features an aerial connection, DVI-I output (notably there is no VGA connection), a FireWire port for DV, and a connection to a breakout box that includes analogue and digital multimedia sockets. Stereo analogue video in and out, S-video in and out, SPDIF out, and FireWire connections are present on the breakout box, whose cable is long enough to reach the front of the PC. You can plug in your VCR, digital or analogue camcorder and download video footage for editing with the supplied copy of Ulead Video Studio 5.0SE.

The card includes a TV aerial input and a stereo TV-tuner, so you can use your PC's

monitor as a television, or take the analogue TV-out signal and run it to your TV. You could even set up time-shifting and use your computer like a video recorder to store and playback your favourite shows when it's convenient. The television display can be set to either full-screen or in a window, so you can watch TV while surfing the Web.

Given that the 3D Prophet can be used to drive your home entertainment centre, it would have been crazy not to include a remote control. The radio remote control works across a lounge room and can be configured to drive your PC DVD drive or television.

The card includes hardware DVD acceleration so DVD playback is outstanding — smooth and clear. The enormous list of features, speedy benchmark results, and 3-digit price tag make the 3D Prophet the ultimate video card for home entertainment.

Matt Overington

Contact Guillemot
Phone (02) 8303 1818
Online www.guillemot.com.au
Price \$999
Verdict ●●●●○

ZoneAlarm Pro 3.0



SAFETY ZONE

Because the basic edition is so good, its big brother ZoneAlarm Pro is often justifiably overlooked. To date, there hasn't been enough of a difference to warrant the expense. ZoneAlarm Pro version 3.0 changes all that by beefing up the firewall into a solid Internet security suite.

Integrated cookie protection promises peace of mind by allowing you to block all cookies or just those that come from untrusted sites. However, we found it difficult at times to figure out exactly which site is issuing cookies, with larger operations like eBay and their myriad domain names.

Ad blocking has been added to the mix too, with the ability to prevent all advertisements from showing, or just those that are slow to load. Again, we found that in some cases this latter option would result in actual page components being blocked and rendered several sites unusable, so some experimentation with settings will be necessary.

The program also gracefully handles PCs that roam across several networks. When we plugged our test machine into a second network,

ZoneAlarm Pro instantly detected it and prompted us to choose a level of trust for that domain. This level of automation is increasingly important as mobile computing and wireless networks continue to spread throughout the working world.

ZoneAlarm has always been quick to sound the alert when an unauthorised user attempts to connect to your computer, and now provides additional information from a list of recommended actions through to capable of providing a full WhoIs trace to the specific Internet provider who owns the sender's IP address.

To cater for all these extra capabilities the interface has undergone a much needed redesign. Individual screens begin with a summary page for that category but have multiple levels of detail available for the more technically minded.

If all you want is a firewall then you can stick with the free ZoneAlarm, but to completely bullet-proof your network against unwanted intrusions, ZoneAlarm Pro 3 will let you surf with total peace of mind.

Andrew Parsons

Online www.zonelabs.com
Pricing US\$49.95
Verdict ●●●●○

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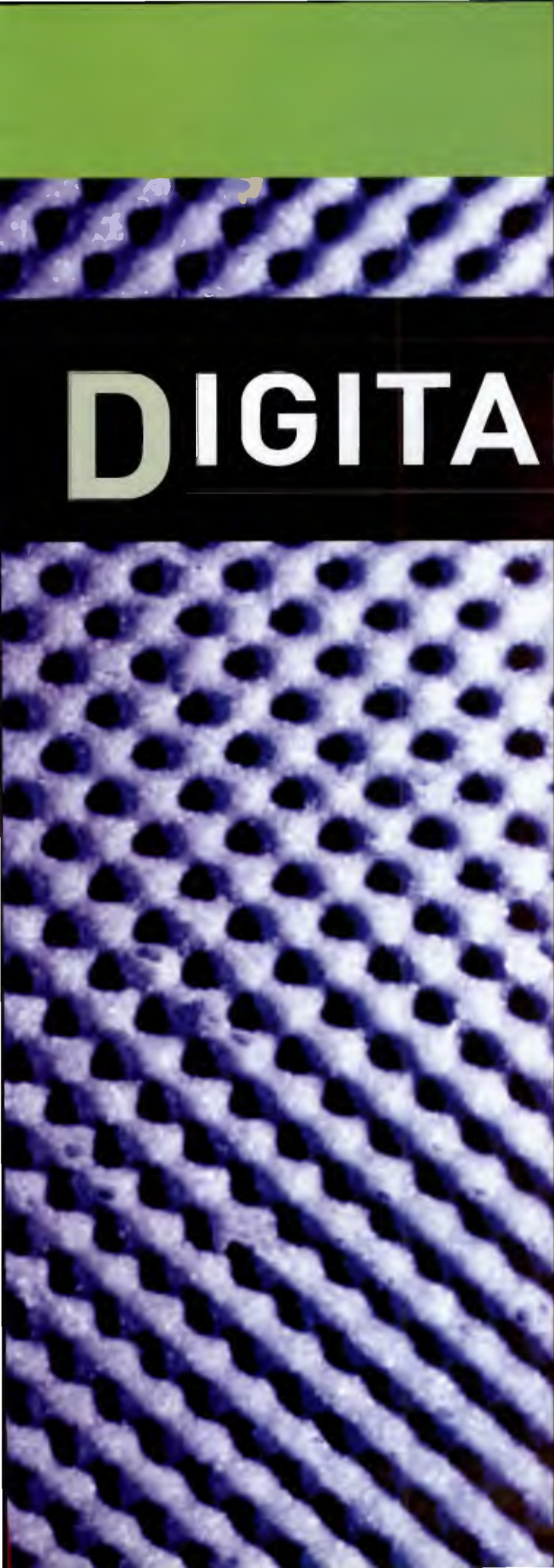
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BURNING QUESTIONS

WHETHER YOU HAVE A CD WRITER ALREADY OR PLAN ON BUYING ONE, PRODUCING A CD CAN BE A DO IT YOURSELF JOB, BUT BEWARE OF SOME OF THE COMPLEXITIES INVOLVED.

Up to 80 minutes (usually 74 minutes) of quality recording time can fit onto a single pressed audio CD, a durable, universally accepted format. Take this a step further. That 80 minutes translates to 650MB of data. In MP3 terms that translates to about 10 hours of MP3 at a bitrate of 128KBit/s — a sizeable chunk of listening. Doubtless there are some readers who would not have that amount in their entire collection.

The prospect of this amount of music on a single medium is mighty tempting — it's convenient not having to swap discs and it's portable. Legalities aside, if you like the idea of listening to MP3 on a CD then you're thinking of a CD produced on a CD writer. There are some commercial releases of MP3s on pressed CDs but realistically anyone wanting to listen to MP3 CDs had better get used to doing it themselves.

THE BURNER

If you've not been dissuaded from transferring your MP3 collection to CD, or you are a prolific recording artist with copyright to your own material and want to make your own CDs, then obviously you'll need a CD-R or CD-RW drive, a CD burner in common parlance.

These days you're effectively restricted to two types of burning device; IDE (or ATAPI) and USB, which translate to internal and external drives respectively. There's also FireWire and a smattering of SCSI drives around but you'll have to look hard. USB CD burners are usually ATAPI drives in an enclosure fitted with a USB backplane and power supply.

When people argue the merits of a CD-R or CD-RW drive the criteria is usually based on the percentage of ruined discs to successes. Anything higher than 10% failure is unacceptable. People will usually blame the drive but it's only part of the problem.

The dread of anyone producing a CD is buffer underrun, that is, where the flow of data to the burner is interrupted in some way. Burners must have a constant flow of data to be written once the burn process starts. Every drive has a memory buffer to facilitate

this, a sort of staging point for the data before it squirts down to the writing laser. Interrupt the flow of data or allow the buffer to deplete and there's another expensive drink coaster to add to the collection.

Buffer underrun occurred more often in the early days of the CD writers but the occurrence is a lot less frequent these days due to improved technology specific to CD burning activities — the well-known "Burn-Proof" technology which is a combination of hardware, firmware and software — and the increased clock speeds of CPUs. (See *APC's* April 2001 issue for more on Burn-Proof Technology).

Activity on the burner is dependent on the amount of time or clock cycles that the CPU can devote to it. It stands to reason the more non-CD burner activity is happening the less the CPU can devote to maintaining the flow of data in a burn session. Before buying a burner, make sure the rest of the system is up to scratch.

Another important consideration when buying a CD-R or CD-RW drive is its compatibility. Thankfully, most of the guesswork has been taken out of it. Determining if the CD you burnt would be able to play on another drive or hi-fi system used to be a lottery. To complicate matters even further, some media behave differently in certain drives so that the CD burnt in one drive may play in some other drives but not in others.

Thankfully most of these questions are eliminated in recent times as manufacturers standardise, stop cutting corners and figure out what works and what doesn't. If in doubt, check the drive manufacturer's Web site or ask them which media they recommend. If no recommendation is forthcoming, find a manufacturer which cares enough about its product to have it tested with different media, and, publishes the results!

THE SOFTWARE

You may not have a choice in selecting software to burn with. Retail boxed burners often come with software bundled. The chances are it is one of three popular packages — Roxio Easy CD Creator, ahead Nero Burning ROM or NTI CD-Maker. They may come in SE or Lite editions (which strip functions like the CD labelling module from the full product) but they all do the job in providing a front-end for you to stage a burn session. If the burner doesn't come with software, then the chances are one of these packages in their retail form will be your choice.

As many have found out, burning a CD is not as straightforward as it seems. The burning question (pardon the pun) you must ascertain what the CD's audience is. That is, what sort of device or platform is the CD going to be read in? Recent model CD-ROM drives should accept all CD-R or CD-RW media. There are exceptions, like Linux — which depends on the kernel version and will only accept CD-Rs burnt to certain ISO, UDF and Joliet formats — however this has nothing to do with the drive itself but the environment it is working in.

Burning audio CDs adds another complexity. Many hi-fi-component CD players will not accept CD-RW, so if you intend playing your CDs across a range of different output devices it is always best to check what is accepted by the device. And even that is not a watertight guarantee.

If you have a store of MP3s and want to convert those to audio CD tracks then the three programs mentioned will easily allow it; simply by opting to create an audio CD from the opening wizard, dragging and dropping the MP3s to burn, and then burning. The software will expand the compressed audio to CD audio on-the-fly and write it to the media.

All of the jukebox player software seen on the following pages will also burn CDs as audio or MP3s provided the drive used is supported the same as the dedicated burner software. Some functionality might be missing; for example, only 2x burning is permitted, but this is likely to be a deliberate incentive for you to upgrade to a full version of their software which will enable the full speed of the burner.

THE MEDIA

The last building block of the CD-R and CD-RW saga is the most neglected, largely because of the complexity of discussion on the media used. Which brand of blank CD to use is a poser and *APC* is afraid it can't shed too much light on the matter other than what has already been covered. In short, you get what you pay for. However, there are some background factors that may influence your decision.

The dyes used in CD-R media vary and discussions of a few years ago were centred on which dye produced the best, most reliable results. That question seems to have died recently as manufacturers improved their processes in the media, drive and software technologies.

CD capacities are usually the next question posed. By far, the majority of blank CDs sold are rated 74 minutes (audio) or 650MB. There was a 63 minute standard that seems to have died out, 80 (703MB) minutes media is popular and there is a smattering of 90 and 99 minute blanks (791MB and 870MB respectively), although these are not popular due to incompatibility with different playback devices.

There are instances of users squeezing more capacity out of the media than it is rated but the practice is haphazard. All CD media will have an amount of "play" between what it is rated and the actual final burnt capacity. This is due as much to the type of data written as the quality of the media used, the amount of redundant data and the way the software handles lead-in and lead-out information. Like most of the variables in CD recording, the difference lies in the way a manufacturer has applied the specifications. For the best possibility of compatibility across all CD drives and players, stick to 74 minute media and don't try to squeeze in more than the rated capacity.

CD Media which is specifically targeted for audio use is a misnomer. The media is the same as any other media with a slight difference in having a Disc Application Code marker on the CD. Standalone CD recorders look for this Code but CD-R and CD-RW drives do not. There is a price premium for these blanks. If you're not using a standalone CD recorder then save some money and stick to the regular vanilla media.

Pay attention to media that is rated for a particular speed. Burn speed in some instances affects the

BLANK MEDIA TYPES AND PLAYER COMPATIBILITY

Older audio CD players	New audio CD players	New "Multi-Read" audio CD Players	Basic DVD Players	"Dual-Laser" DVD Players	"For Music" or "Music Only"
Not Required	Not Required	Not Required	No	Not Required	
60 or 74 minute CD-R	Yes	Yes	Yes	No	Yes
80 minute CD-R	Maybe	Yes	Yes	No	Yes
74 or 80 minute CD-RW	No	No	Yes	Maybe	Yes

Table courtesy of Rudy Trubitt. Found at www.roxio.com/en/interest/music/audiomedia.html

readability of a CD. Generally, the faster the burn, the greater the likelihood of burn failures. Worse still is the likelihood of random errors on the media (Block Error Rates or BER) that will occasionally manifest. Due to the nature of audio CD data retrieval (aka as sound!) the errors have to be huge before the CD becomes unplayable — for data CDs the errors can be critical. APC recommends any CD-R (or CD-RW when they become available) rated 12 speed or better should be cranked back a notch or two for media that is not certified for that speed.

Lastly, question the durability of burnt CDs. Compared to stamped CDs the burnt variety is a more volatile creature, mainly due to the difference in the manufacturing process. The various organic dyes that react to the recording laser and occupied much debate over which dye had greater merit are subject to variations in temperature, humidity and light.

All CD-R and CD-RW disks should be kept in optimum conditions to gain maximum life. That means light, heat and humidity controlled, returning the CD to the jewel case after use, maintaining a clean drive, only handling the edge or centre of the media and not marking the media.

Media manufacturers will rate their products longevity between 70 to 200 years but, as the Optical Storage Technology Association (OSTA) says, "The primary caveat is how you handle and store the media. With proper handling and storage, your CDs will outlive you."

DISCLAIMER

There is a dampener that will make you think before reading further. The official position of the Australian Recording Industry Association (ARIA who do more than run an awards night) is that all downloading of MP3s without the express permission of the copyright holder is illegal. To quote their official statement to APC:

Please be advised that it is illegal to download music MP3 files from the Internet without the copyright owners permission to do so. This includes complete and partial versions as well as remixes containing large samples of protected sound recordings.

The Copyright Act 1968 prohibits the copying of protected sound recordings without permission from the Copyright owner in question. It is illegal to make a copy of any sound recording for any purpose without the appropriate license & payment of applicable fees. Therefore it is illegal for a person to "rip" CDs and encode to a compressed format, even if the person owns the CD.

The restrictions might appear draconian but that is the state of the law. Other interpretations exist in other jurisdictions, notably the RIAA stance in the US which permits you to make "best of" mixes for personal use.

APC in no way condones the illegal ripping or copying of copyright material, even for personal use or free distribution. ■



WHAT'S BEHIND THE FIGURES?

Time is money as the saying goes and no industry pushes this mantra more than IT, where the collective obsession of all the arms of the industry seems to be on speed. CD writers are no different — not a month seems to pass without a new benchmark being set for a CD read speed.

In the beginning it was pronounced that CD-ROM drives should be able to extract data at 150KB/s. This was too slow for certain PC applications so it was quickly replaced by drives that did 300KB/s or 2x the old standard. This became known as double-speed and was incorporated into Microsoft's MPC (Multimedia PC) standard that predated Windows 95. The multiples carried on from there.

CD-R and CD-RW drives rate the same way but have the added speed delimiters for writing. A CD-R drive will have two numbers, like 32 x 8. The higher number is the read speed and the lower is the write speed. CD-RW drives have three numbers, say 32 x 8 x 4. The highest is the read speed, the next highest number (it matters not what order the numbers appear) is the write to CD-R speed, and the smallest number is the write to CD-RW speed.

Why the slower speeds for CD-R and -RW? When burning a CD-R, the laser needs to heat the dye material to emulate the pits and lands of a pressed CD and this process takes more time than for a simple read task. For a -RW disc the temperatures needed to phase change the substrate in the burning or erasing process are greater, hence the even slower speed.

Incidentally, tests have been performed to determine the best speed to burn at and the best media to do it with across a number of drives, and it was found there was virtually no difference between burns done at 3x to 12x speeds. There was an increase in the number of errors for media done at 1x speed and that is attributed to the longer time the laser spends writing on any particular area, and the subsequent longer cooling period or period for the material to return to a stable state meaning more errors. Interestingly, although the error rates differed, no CD burnt actually failed to read in another drive.

So if you intend buying to a speed specification there is no sound reason to desire the faster speed other than to complete the job quicker.



Finished



Not quite

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THE AUDIOPHILES

APC TAKES A LOOK AT THE POPULAR AND THE UP-AND-COMING AUDIO ENCODING FORMATS. WE SIZE UP THEIR GOOD POINTS AND BAD IN THE BATTLE FOR THE HEARTS AND MINDS OF AUDIOPHILES.

When you listen to a CD, you are listening to uncompressed digital audio. A regular audio CD will fit a maximum of 74 minutes, which is approximately 650 MB of disk space. By exploiting the limitations of the human ear, however, as well as the psychoacoustics of perception, compression algorithms — otherwise known as codecs — can be used to create much smaller digital audio files.

The MP3 codec, for example, can compress audio to less than 10% of its original file size without noticeably changing the sound quality. Further compression, whilst noticeably degrading sound quality, will create the situation where an audio file can be downloaded, and sometimes listened to, via a modem. Compression is necessary on the Internet because, whilst a CD player has the luxury of being able to play about 1,411Kbit/s, a regular modem is limited to just 56K.

It hardly needs to be said that the MP3 codec has seized most of the limelight when it comes to digital audio formats, but there are many who believe — with good reason — that it's days are truly numbered. Meanwhile, there are several other audio codecs currently battling to take its place as the standard for digital audio in the future.

MP3

Believed by many to be a free format, the MP3 codec was actually patented in 1989 by the Germany-based Fraunhofer Institute, and requires a licence for any encoding or decoding software. Whilst often praised as being comparable to CD in terms of audio quality, this is really only true at high bitrates (such as 256KB). At these settings, the savings in file size become hugely reduced. It's MP3's handling of stereo imaging, however, that is one of its major weakness. Encoding at "dual mono" can overcome this limitation, but at the expense of almost doubling the file size. Additionally, not all encoders are created equal. Whilst some encoders are freely available on the Internet, the MP3 files they create are often

a long shot from those encoded with the original Fraunhofer codec, for instance. So, whilst MP3 may be the most talked about digital audio format, safe bets are on it falling by the wayside in the next few years.

Pros *Very widely used and supported format. Excellent quality.*

Cons *Not the best compression. Under licensing restrictions.*

Summary *Use MP3 for music you want to keep and share for years.*

Windows Media Audio (WMA)

The Windows Media codec went to version four before being unleashed on the unsuspecting public. On the one hand it has been positioned by Microsoft to overthrow RealMedia as the leading commercial streaming media format. On the other hand, it is also a contender to face MP3 in the long term as the primary downloadable media format.

The quality is very good, with excellent high frequency response, and it's becoming widely supported by players and encoders alike. There is little doubt that WMA will be around for years to come, but whether it will have what it takes to come out on top, only time will tell.

Pros *Rapidly becoming a standard. Good quality.*

Cons *Very lossy compression.*

Summary *Use WMA for audio previewing or streaming, not for archives.*

RealAudio/RealMedia G2

RealAudio codec has ruled digital audio online. Its major drawback has been the limitations imposed by its pricing and licensing requirements. Despite its widespread use, the quality is often considered to be noticeably inferior to most competing formats, especially in the case of lower bitrates. RealMedia's strength seems to lie in its positioning as a streaming format, although the differentiation between downloadable and streaming formats is becoming irrelevant.

Pros *The standard in streaming audio. Good compression.*

Cons *Low quality. Very lossy.*

Summary *Use RealAudio if you need to stream to a large Web audience.*

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Ogg Vorbis

Being a relatively new player in the digital audio world, and still in beta, Ogg Vorbis has a couple of features that make it worthy of being taken seriously. Firstly, it's an open source, non-proprietary format with no patent or royalty licensing restrictions. In fact, it's the only one. Secondly, it claims to have far superior audio quality than MP3 for the same bit rate.

There are a few things, however, that are currently restricting the uptake of Ogg Vorbis as a mainstream format — aside from the name. Firstly, there have been serious bugs with streaming Ogg Vorbis files, and reports of high frequency distortion at some bitrates. Given that it is still under development, these problems will undoubtedly be ironed out. The recently released Ogg Vorbis plugin for Winamp has also dramatically increased its available audience. Overall, Ogg Vorbis can be likened to the Linux of audio codecs and as such, has a strong and committed following.

Pros Excellent compression and quality.

Cons Still in beta and therefore quite buggy.

Summary Use it for storage or streaming but be prepared for problems.

Others

Given the huge impact MP3 has had on the Internet, the music industry and popular culture, it's no wonder that there are growing numbers of companies that are now trying to secure their slice of the digital audio pie.

MPEG4, for instance, sometimes described as a combination of two other codecs, AAC and VQF, is expected to produce files half the size of MP3 and of a higher quality. AAC, developed by Fraunhofer with AT&T, Lucent, Sony and Dolby, is intended to be an improvement upon MP3 and is becoming the basis for many other codecs. VQF, now licensed by Yamaha, is hailed as having a compression ratio of 20:1 — a third of the size of MP3 files. MPEG-Plus, on the other hand, is a codec that is primarily concerned with quality, not file size, and is considered by many to be the best.

Whilst Ogg Vorbis is taking the "free for all" approach, there is also Liquid Audio, which is being positioned as a secure format, geared towards the commercial distribution of music. Others to keep an eye on include Dolby's AC-3, Sony's ATRAC3 (currently used as a hardware codec in Vaio portable players) and AT&T's a2b format. ■

Audiophile-speak

CODEC

An audio codec is a compression algorithm used to make audio files smaller in size. The word codec is a neologism similar to the word modem. Where modem stands for "MOdulator/DEModulator", codec is shorthand for "COder/DECoder". Lossy codecs such as MP3, WMA, RealAudio and Ogg Vorbis have greater compression ratios than lossless codecs such as WaveZIP, but do so by discarding audio information.

BITRATE

This refers to the average number of bits per second (bps) or kilobits per second (Kbits/s) transmitted by a codec. The lower the bitrate, the less data used by the file to encode audio. Consequently, files with higher bitrates will retain more audio information and generally sound better.

CBR

CBR stands for constant bitrate. If a file is encoded at 128 Kbits/s, then the filesize will be 128 thousand bits times its length in seconds. Consequently, all files encoded at the same CBR will be the same size, irrespective of the codec used. They will not necessarily be the same quality, however.

VBR

VBR stands for variable bitrate. Using VBR can decrease the file size of compressed audio by allowing the codec to use less data for audio that is more easily encoded. A VBR encoded file should sound identical to a CBR encoded file, only it should be smaller in size.

STEREO

Stereo usually refers to two mono channels of audio — left and right. When it comes to compression, there's more to stereo than two channels or, more to the point, there's less. With MP3 there are four types of stereo: "Intensity stereo" is a mono recording with directional information, used to recreate a stereo effect; "Joint stereo" uses intensity stereo for low frequencies and a two-channel stereo recording for high frequencies; "Dual channel" or "dual mono" uses two discrete channels for true stereo imaging. The title "Stereo", on the other hand, usually refers to an encoding that shares the bandwidth (specified by the bitrate) to recreate the original stereo imaging.

SAMPLE RATE

This refers to the number of "slices" per second that are used to record an audio signal. The more slices, the more accurate the recording. Usually measured in hertz (Hz — cycles per second) or kilohertz (KHz — thousand cycles per second). CD audio is recorded at 44.1KHz and this is the sample rate recommended for compressed audio as well, although other popular sample rates include 22KHz and 11KHz.

STREAMING

This refers to listening to an audio file as it downloads, rather than having to download a file in its entirety before being able to play it. Most software players will download a few seconds of buffer to ensure that the file plays smoothly if there are interruptions to the network connection. Streaming audio usually requires highly compressed audio, a broadband Internet connection, or both.

8 BIT / 16 BIT

These terms refer to the resolution of an audio file. The term "8 bit" is used to indicate 256 units of dynamic range and 16 bit indicates 65,536 units. This can be thought of as being horizontal slices of audio levels in much the same way as the sample rate was vertical slices of time. There is also 24 bit audio which is considered professional quality and requires special hardware to play on a computer.



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Forget lining up originals on the scanner glass. You can place them more or less how you like, and Canon software ensures your finished scans come out perfectly straight. It automatically creates a separate file for each image. And for bulky objects like books, some models have a spring-loaded Z-Lid to hold them flat.



LIDE technology...

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CanoScan N670U
\$199^{RRP}



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\$209^{RRP}



CanoScan N1240U
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Like a camera, a scanner depends on quality optics. Our premium machines incorporate Canon's aspherical lenses, and an extremely fast f-stop contributes to the 3.3 optical density on our top-of-the-range D2400UF.

It scans at up to 2400 x 4800 optical dpi, with colour quality approaching mid-level drum scanners costing thousands of dollars.



Simulated Illustrations

Saving face. FARE technology enables you to detect and remove dust and scratches from film scans automatically.



Less than 36-bit.

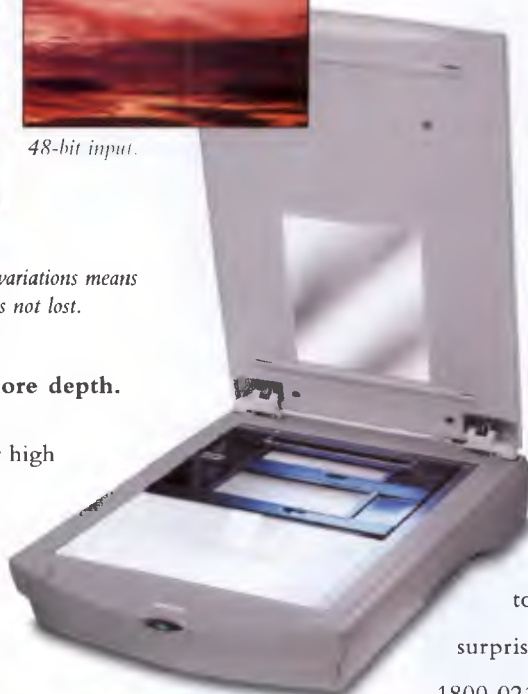


48-bit input.

More sensitivity to colour variations means that shadow detail is not lost.

Get more bits. See more depth.

Bit-depth is essential for high quality. The number of readable colour bits affects colour accuracy, and the detail visible in bright highlights and dark shadow. So all Canon scanners are capable of at least 42-bit input, and many offer 48-bit. (You might say anything less would be a two-bit scanner.)



'But I want to scan transparencies...'

You can. Four models in the range scan slides and negatives. One will also accept up to 4" x 5" professional transparencies. The FS4000US can batch scan 35mm film strips at up to 4000 optical dpi. Some models can even detect and remove dust and scratches automatically, using an advanced Canon technology called FARE, or Film Automatic Retouching and Enhancement.

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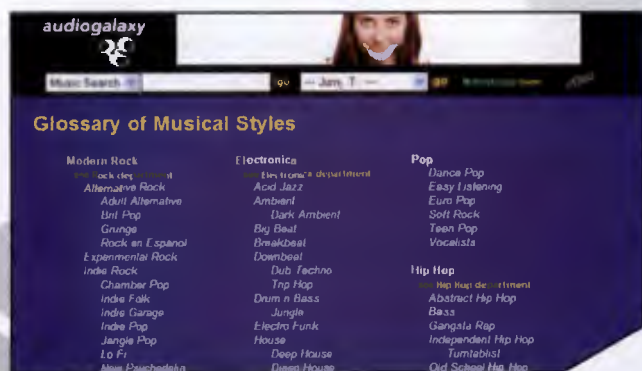


LIFE AFTER NAPSTER

WITH FORMER NAPSTER USERS LEFT HIGH AND DRY, MILLIONS HAVE SWARMED TO ALTERNATE FILE SHARING SERVICES. APC SNEAKS A PEEK AT FIVE OF THE BEST ALTERNATIVES.

When Napster finally succumbed to the legal thrusts of the conventional music industry, it created a large void in the digital music community. It had hung on for much longer than expected, but the fact that it was losing ground against the record companies was enough for users to start wondering about alternatives. They needn't have worried.

AUDIOGALAXY SATELLITE www.audiogalaxy.com

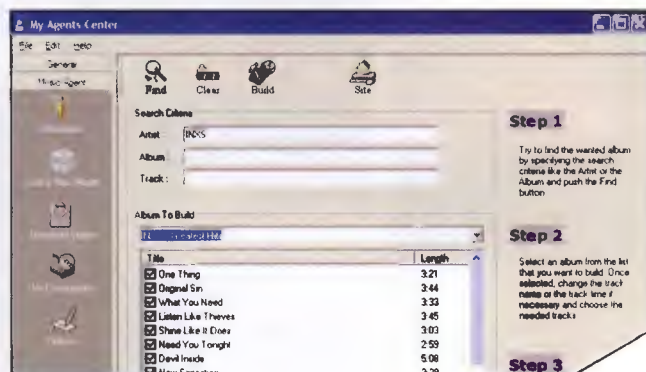


Most of the Audiogalaxy product is hosted on their Web site which also serves as one of the top music portals. The Satellite is a very small component that gives users the ability to share their own music with the rest of the proprietary Audiogalaxy network, but to initiate the transfers themselves you'll have to use the Web site.

Rather than providing a full list of the files that match specified criteria, Audiogalaxy summarises them into unique names. Clicking the Satellite button next to one of these hits will result in the fastest and closest specific file location being added to your transfer list.

COMBACK MUSIC AGENT www.combackcentral.com

COMBack is a newer style application seeking to give file-sharing capabilities to the less technologically inclined. Providing a simple three-step process, the user can first choose an artist or album and the program will populate a list of tracks for that selection. From



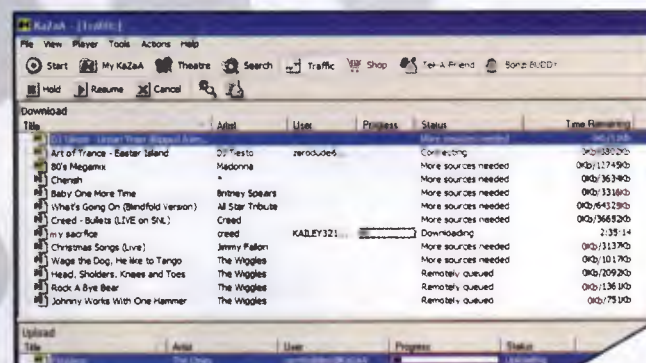
there, it's a straightforward process to select the desired tracks and click Build.

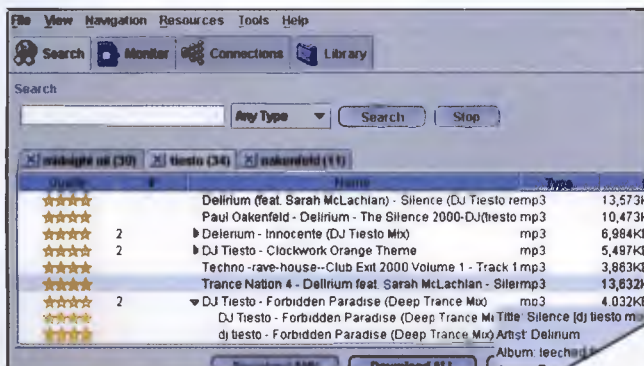
Unlike the other programs, COMBack determines albums and song lists by using allmusic.com as its source. This can mean that selected music may actually not be available. The theory behind this is that eventually, somewhere, that music will be shared, and COMBack will be ready to download it when it appears.

KAZAA www.kazaa.com

There are close to a million users of KaZaA online at any one time, with an average of five million files being downloaded every week. Because of the staggering numbers involved, searches performed in this FastTrack-based client can return hundreds of hits — which KaZaA groups the results into categories.

KaZaA doesn't restrict you to music files alone. There are filters and search options for images, videos, documents and other file types. Of course, the unscrupulous and unwary abound on the network, so KaZaA combats this with automatic blocking of script



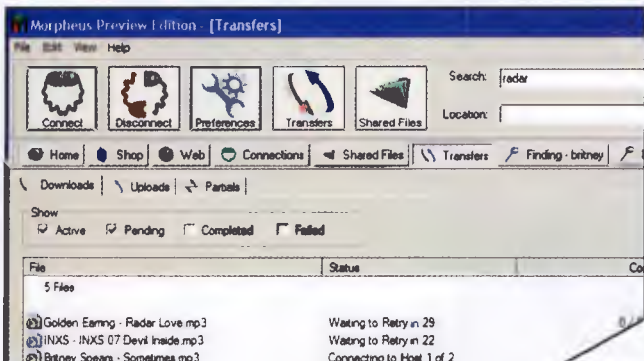


files with the ability for the user to add their own types to the preventative list.

LIMEWIRE www.limewire.com

LimeWire is still the best of the Gnutella P2P-based clients and its user interface is easily the most attractive and functional.

You can sort your search results by type, size or speed of connection, and any users that are using a chat-enabled client like LimeWire can be contacted directly. This adds a sense of belonging to a greater community rather than simply leeching each other's files.



MORPHEUS www.morpheus-os.com

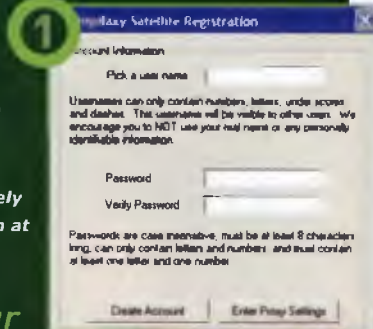
Morpheus is easily the most popular file sharing program available today. Morpheus has recently changed over from using the FastTrack P2P technology to the more established Gnutella gNet. This has caused them to fall even further behind the other leaders in terms of new functionality.

To combat this, Music City is bundling more features with its latest edition, in an attempt to woo back users. This includes the important capability of keeping each set of search results on a separate page. Older Gnutella-based clients presented all search results in one window resulting in an unmanageable mess. ■

HOW TO USE ... Audiogalaxy Satellite

Step 1: Set up

Before being able to access the Audiogalaxy service, you'll need to install the Satellite component and register yourself with the network. Initially you'll only need to select a user ID and password, but ultimately you'll need to identify yourself with at least an email address.



Step 2: Sharing your files

A peer-to-peer network only works well if the users of the system share files too. In the Satellite client, select the folders on your system that contain music you're willing to offer. The Satellite then transfers the file details (including MP3 ID information) to the central Audiogalaxy server for advertising across the network.



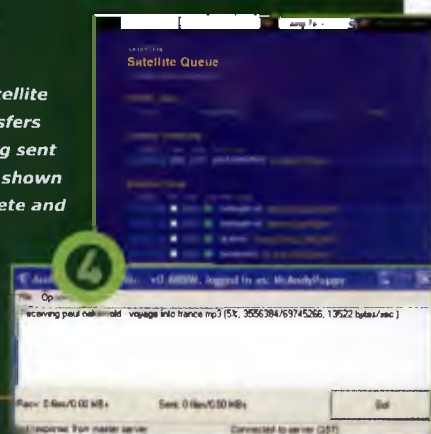
Step 3: Searching for files

Searching is performed on the Audiogalaxy Web site and doesn't require the Satellite to be installed. When the list of matches is returned the user can select the Satellite link button which will cue it in the Web site until your client has a free slot. Each hit provides details including play time, file size and the status of the connection.



Step 4: Monitor downloads

The main purpose of the Satellite client is to monitor the transfers as they occur. Each file being sent to or from your computer is shown including percentage complete and transfer speed. If you prefer, this information can be also viewed online, with additional information about cued files being displayed too.





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OBSERVATION: Some businesses tolerate absurd inefficiencies. Like forcing staff who should be out in the field to structure their days around office-bound desktop computers. Smarter managers know they need to boost face-to-face time with their customers. The big question: how?

SUGGESTION: Eliminate desktop computers. Write them off. Dump them. Instead, consider an alternative: provide mobile computers for every employee who ever needs to work off-site. Weigh the cost of this (incremental and deductible) against the potential return on investment (exponential).

OUTCOME: Employees' lives no longer revolve around their desktop computers. Client contact time increases. Customer satisfaction soars. Your company becomes more flexible and responsive. The initial cost is repaid by productivity gains. Less agile competitors drag their feet and get trampled by your team. Employees, empowered by your decision, bust their guts for you. Your business thrives. You become a legend. Maybe even a guru.

ACTION: Investigate the costs and benefits of moving across to a totally mobile computing platform (perhaps based on the Satellite Pro 6100).

CONTACT: Your Toshiba reseller, visit www.isd.toshiba.com.au, or call 1800 021 100.

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TOSHIBA

JUKEBOX JURY

SOFTWARE TO PLAY YOUR MEDIA SHOULD BE AS EASY AS WATCHING TV. AND IT IS IF ALL YOU WANT TO DO IS PLAY IT BACK. BUT WHAT DO THE CURRENT GENERATION OF SOFTWARE MEDIA JUKEBOXES HAVE TO OFFER IN EXTRAS?

Windows Media Player



Whatever you're looking for in a media player or jukebox, WMP is a great place to start. Why? Because you already have it if you're using Windows 98 or better. However, as the player's functionality has grown, it's best to occasionally go online for

player updates. And remember, different Media Player versions operate for various OSes.

In its highest incarnation, WMP for XP can do it all, especially if you have one of the portable players that it supports natively. It has a plug-in architecture that allows third-parties to develop functionality for it — anything from fractal visualisations (to play in conjunction with music) to new music codecs or digital rights management content. Currently it plays CD, MP3 and WMA (or ASF which is the same as WMA). It can rip CD audio and encode to WMA; play VCD movies; play DVDs, although you need a third party DVD decoder like PowerDVD; play streaming video like broadcasts from The Basement (www.basement.com.au); or play streaming Internet radio broadcasts.

WMP is a bit clumsy when it comes to making playlists, but it will search where directed for compatible media files and catalogue them. For audiophiles it has a back end to a CD database, so it will look up ID3 tag (track/artist/album information embedded within the music file) details online and will burn your encoded tracks to CD as CD audio or in its existing format.

Pros No expense; Mac version available

Cons Certainly not best of breed; interface issues

Bottomline Surprisingly full-featured

Online www.windowsmedia.com

Price free

Rating ●●●●

MusicMatch Jukebox



Probably the best known of the third party jukeboxes is MusicMatch and it's easy to see why. It does audio and nothing else, supporting CD, MP3, WMA and streamed audio via Internet radio. The interface is plain and simple,

although some skins are available.

MusicMatch's functions are configurable: it will scan the PC for media, organising under album, artist or genre; add plug-in music enhancements like 3D sound, visualisations or album covers; store lyrics; rip and encode to WAV, MP3 or WMA at 64 to 160Kbit/s; edit ID3 tags; and refer back to the online CD Database (CDDb). Its companion program/plugin is CD Burner Plus — a simple to use CD burning application useful for audio or MP3 CDs. It can also squeeze a runtime install of MusicMatch onto the CD for anyone wishing to distribute.

The PLUS version offers some conveniences, like quicker CD ripping, deferred CDDb look up, drag and drop burning, support for ripping from LP or cassette, and Pentium 4 optimisation.

In a highly competitive field, MusicMatch stands out as a good deal whether it comes bundled with a music player or if you just want to turn your PC into a personal jukebox.

Pros Handles MP3, WMA, CD and WAV; manages all media; easy to use; allows plugin enhancements

Cons OEM versions confusing

Bottomline The current leader in third party jukeboxes for good reason

Online www.musicmatch.com

Price US\$19.99 for PLUS version; US\$39.99 upgrade for life

Rating ●●●●●

Winamp



One of the favourites of the hip dudes for simply playing your tunes. It doesn't burn CDs unless you add the third-party plugin, but that doesn't mean future versions won't include it. The appeal of Winamp is mainly for the hundreds of plugins

available. Most are visual enhancements like skins and fractals, but there are plenty of aural enhancements to try out too.

In its vanilla version new users have to contend with a small, stylised hi-fi interface including a 10-band graphic equaliser, playlist window and browser which tracks the music played. If you are online, Winamp brings up artist information from the Billboard music chart site and includes tabs to Internet radio stations and downloadable goodies. The full version supports MIDI, WAV, CD, MP3 and WMA but plugins will expand this even more.

Usability has some issues. For example you can create a playlist but short of individually deleting the tracks, there's no button control to simply clear it. It's interface is a bit quirky so it might take some time to get used to it. Yet the legions of devotees can't be wrong. Winamp is free — and you can't beat that.

Pros Stylish visualisations and skins, small footprint, good playback enhancements

Cons Poor file management; does not rip or encode

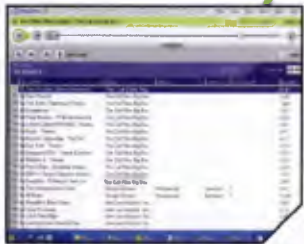
Bottomline Worth a look but not a complete jukebox product

Online www.winamp.com

Price Free

Rating ●●●

RealOne Player



Real Networks were pioneers in the commercialisation of the Web from a time when they envisaged a go-it-alone approach with their proprietary Real Audio format. These days the company has reinvented itself with their new flagship software offering called

the RealOne Player.

The strategy resembles the Windows Media strategy in making a stake for people who want a universal media platform: a one-stop shop. At its simplest it is a media player, at its most ambitious it's a front-end for an entertainment portal with a premium service option accessible via subscription. Real has collected an impressive array of partners who provide the content, names like Fox Sports,

E! Online, The Wall Street Journal and CNet. It's pretty slick, seamlessly tabbing between the different content categories (sport, entertainment, lifestyle, news) and the player's inbuilt functions.

Subscription brings CD jewel case printing, support for ripping from LP or cassette, format conversion and DJ effects like crossfades to the program. You'll also get access to extra content areas. Most codecs are covered now so don't just think you need it for playing back Real Audio files. RealOne also catalogues your music collection and burns to CD, and if your portable MP3 player is supported then you need never leave RealOne for any audio needs.

Pros The jukebox with everything; fast ripping and encoding

Cons Can be a nuisance if not on permanent broadband; needs exclusive access to media types

Bottomline Works well across all media types if given free rein but the subscription service is yet to be proven

Online www.real.com

Price Free download for Basic player; US\$9.95 per month for premium content subscription

Verdict ●●●●

Liquid Player



Liquid Audio champions SDMI and DRM and their Liquid Player is just part of their overall strategy which heavily involves signing artists and labels to their scheme. Artists make their music available and Liquid Player users hop

straight online (the player has a browser interface) when they open the application and download away. The files downloaded from Liquid Audio's stable are LQT files which are Dolby AAC encoded and wrapped in Liquid's DRM envelope.

What this means is that you can't take the file and play it elsewhere. LQT files downloaded free from the site can be burned to CD or downloaded to a portable player, but will not play. Otherwise the Liquid Player is a straightforward jukebox that plays CD, MP3, WMA and WAV as you would expect.

When playing LQTs, the listener has the option of tabbing to the Now Playing window where an album cover is displayed if available and ID3 tag information. Another tab for organising your music lets you check to see whether any track is burnable to CD or exportable.

As for ripping and encoding, Liquid Player does it all and

offers the option of AAC or MP3. AAC will encode up to 78KBit/s making it one of the most efficient encoders and MP3s can be encoded to 320KBit/s.

Pros Easy interface; handy access to Liquid Audio files

Cons Heavily online dependent

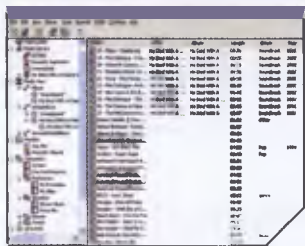
Bottomline Sparse on the surface but with a wealth of advanced features

Online www.liquidaudio.com

Price Free download for Basic player; US\$19.95 for Liquid Player Plus 6

Rating ●●●

J. River Media Jukebox



The downloaded version is really trialware, allowing 28 days use before expiry or the option of purchasing the PLUS option. Its features and functions rival any other jukebox media player discussed here, offering a more traditional Windows interface

instead of the stylised players like Winamp. It still offers skins and visualisations but these are comparatively poor.

There are two aspects of MJ that will prove popular. The first is the Music01 P2P file sharing community that is parcelled as part of MJ. MJ works hand in hand with Music01 and, like RealOne and Liquid, the player is heavily online dependent but significantly more tolerant of third party media players muscling in on its space.

The second aspect found is the CD burning function. It's a pearl of a burner for data or audio.

In operation, MJ is big on playlists. Drag and drop files into a playlist or view by artist, album, genre or categories like music for dining. Internet TV and radio are supported as are some portable devices.

Serious listeners will appreciate Media Jukebox for the way it presents the media with a comprehensive rundown on the properties of the individual files. It remains to be seen how many users avail themselves to the full paid-for version where the Music01 Exchange and fast CD burning capabilities are available. ■

Pros Familiar interface; fast CD burning; music01 P2P interoperability

Cons Best features only available in PLUS version

Bottomline Comprehensive, straightforward and powerful. with a generous feature set.

Online www.musicex.com/mediajukebox/

Price Free download for Basic player; US\$24.98 for MJ PLUS

Verdict ●●●●●



PLUS OR MINUS?

Most of the software media players seen here are either downloaded free or bundled with a CD burner or hardware MP3 player. Many of the software players also offer an upgraded or "Plus" version which is not free. The basic free players are good value — who can complain if it's free — so what compels people to upgrade to the Plus version?

While discussing software jukeboxes with some of their vendors, APC asked the question of conversion rates, what percentage of people using their product, downloaded or bundled, actually go on to upgrade to the Plus or full versions. Most appeared taken aback by the question. One responded with a guess of about 5%; another thought more along the lines of 1% and that applied to his competitors too.

In reality even 1% might be optimistic. The media player genre is so competitive that to deny users of the basic version's generous functionality is to sign a death warrant for your software's prospects, so in effect most users miss little by not upgrading to a Plus pack. MusicMatch Jukebox has its CD burner running at 2x speed maximum for the Basic version.

They aren't stopping you from burning CDs from within their application, but you just can't do it as efficiently as if you'd paid for the software. Another favourite play is to only offer encoding up to, say, 96Kbit/s, which is below CD-quality. The most insidious are the products which offer a limited period of functionality like 14 days or 20 rips or encodes.

The RealOne Player and Liquid Player take a different tack with their emphasis on services for their premium package. Liquid uses a converged model where they are a distribution arm for artists with media for download. The socially responsible will appreciate the rights management embedded in any Liquid media.

RealOne is a total online environment. Current content is overwhelmingly US-centric (Aussie users will be pointed to the UK portal) but Real has told APC that that will change for subscribers in this geographic region sometime in the near future.

Those who do upgrade to a Plus pack usually comprise of users who really need an enhanced feature. Of course, if you have a portable player then you may be locked into one program. No one jukebox here does the lot apart from RealOne, which is the most ambitious in scope.

Users are increasingly aware of strong points and weaknesses in their software and it's no cop-out on APC's part in suggesting that the solution could be to use a number of applications to suit whatever you want to do with the media — one program for playing MP3s, another for CDs, one for ripping and encoding, another for burning CDs, and yet another one to maintain your media library.

This is an extreme example but not inconceivable.

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POCKET DYNAMOS

THE MP3 BOOM HAS LEFT CONSUMERS SPOILED FOR CHOICE. APC TAKES A LOOK AT THE THREE MAIN TYPES OF PORTABLE HARDWARE PLAYERS - SOLID STATE, CD AND HARD DISK - AND TELLS YOU WHAT TO LOOK FOR AND WHAT TO AVOID

In the early days of the MP3 revolution, the first players to venture out into the market were almost exclusively portable and solid state. Portable in that they typically nestled in the hand or pocket, and solid state in that no moving parts are used conserving battery life and avoiding "skipping". High build quality was matched by an equally high price, and most of the mass market was discouraged from dipping their toes into the water, and it wasn't until the hard disk-based and MP3 CD walkman units hit the market that the format began to take off. APC has examined all three types of player and has scrutinised the pros and cons of each.

When making a choice, budget will determine your player's



APC's Wishlist

- **AM/FM tuner** – *Why do so few players have radio? Wasn't it one of the foundations of the success of the original Sony Walkman? How much does a tuner chip cost, anyway?*
- **Memory** – *Flash memory in all its forms – Compact Flash, SmartMedia, MMC, SD – is expensive. Yet there's no ignoring the fact that the most compact designs are those based on flash memory. If people are so turned off by the cost, why can't vendors at least agree on one flash format?*
- **Rechargeable batteries** – *Solid state players use the least amount of power; while hard disk and CD players use more power due to their moving parts. Why isn't recharge capability standard and not optional for the majority of players?*
- **Headphones** – *While it's impractical to expect audiophile quality for earphones bundled with a player, surely this can be improved. While there are some quality variation amongst players, at present the best advice is discard the bundled earphones and invest in some good cans. A good starting point is to look for a pair with the Dolby Headphone moniker.*

feature set. Prospective buyers of CD-based units need to ask whether they intend playing regular CDs and MP3s, or whether wish to play newer formats such as WMA. Also, check the ability of the player to read subdirectories so you don't have to have all your audio files stored in the root directory. Crucial for CD-based players, the amount of anti-skip buffering can make all the difference between the freedom to move around and the need to be very cautious when handling the player. For hard disk players the primary question is the capacity of the drive and how convenient it is as a secondary storage unit.

The solid state flash memory players are still around, going strong. The charges levelled at them — expensive, limited functionality, poor user interfaces — still exist. However, refinements have seen the majority of these second and third generation designs shed the uglier aspects of their forebears. There are still exceptions to the rule, with some absolute howlers making their way into APC's Labs, but generally speaking these solid state players are cheaper, more generous and better sounding than the generation preceding. Though the range does swing between players with primarily novelty value through to bona-fide portable music centres, some home truths remain constant for anyone considering investing in a traditional solid state portable player:

The price of this type of player is very much determined by its memory capacity. The more memory on board (or supported), the higher the price. Forget about any advertising that claims you can hold thousands of songs on a player. How long is a song? Assuming that you'll only want to listen to MP3 encoded at 128Kbit/s (the generally accepted limit of "CD-quality" MP3) then that roughly translates to a megabyte of storage for a minute of music. 32MB players may not fit a whole CD encoded this rate, and as a result 64MB players are more the norm these days.

From the usability aspect a well-designed LCD screen is essential, not just for clear reference about the music played but for feedback from the unit. Hand in hand with this requirement is the need for an easy to use button interface to control and program the player.

We cover nine solid state flash players on the following pages which is representative of the types and styles found on the street. It's not an exhaustive list, but it will serve to give prospective owners of a solid state unit an idea of what to expect in a current generation pocketable music player. ■



Compaq iPAQ PA-2

We've seen Compaq fleshing out their iPAQ product range recently with some nifty gadgets like their latest PocketPCs and data projectors. Joining this lineup is one of the first iPAQ music players. On offer also is a CD-based player that is not included in this roundup.

Solid state and indeed solid in build, the iPAQ PA-2 sports generous rubber grips on the sides designed to absorb shock, offers reasonably intuitive operation, and fits in the palm of the hand. Despite all these qualities, this player is consigned into the "first effort" category due to a range of minor oversights and niggling inadequacies.

For instance, the LCD only shows the file name and battery level. The USB cable plugs into a port on the player's side where there is a tiny rubber plug. The plug has to be removed for the cable because it is not tethered to the player and is the first thing misplaced by any user. Also the PA-2 does not have any built-in memory and relies on a Multimedia Memory Card (MMC) for all storage. Compaq supply one 64MB MMC card in the pack.

They have also bundled headphones with the PA-2. Headphones ordinarily offer superior functioning and sound quality to the ubiquitous ear buds packaged with most players, but the 'phones actually have a tendency to press into the ear and can get decidedly uncomfortable after a short while.

It's not all bad news. Some merit-worthy aspects are in evidence and bode well for a possible upgrade product. The iPAQ PA-2 uses good ol' Windows Media Player as its conduit to the host PC. It handles WMA as well as MP3 formats and comes with MusicMatch Jukebox. However, at Compaq's asking price of \$499 it takes a brave soul to predict a bright future for this particular product.



M-Any Dual-Play

This player is another of the cassette-type, like the Rome II (reviewed *APC* October 2001), but with double the memory from 64MB to 128MB. With an expansion slot for a MMC card the Dual-Play can be considered one of the leading lights in this range of pocket players.

It looks and feels like a tougher specimen than the Rome II with its magnesium alloy shell, the substance prized by notebook computer designers for its strength and light weight. A rechargeable battery recesses in a corner of the player, like the Rome, and there's an arrangement of navigation buttons on the player. User feedback is provided by the tethered remote which simply supplies a two-line readout of the file name, track number of the total number contained on the Dual-Play, and the battery level.

Also included in the kit is a carry pouch, car power adapter and a battery recharger. Playing the unit in the car would mean using the cigarette lighter for power and connecting it to the Dual-Play sitting in the cassette deck. Bad luck if you want to light a cigarette!

The Dual-Play comes with a version of the M-Any Loader application, which is a klunky interface between the PC and player. The alternative is to use Windows Media Player if you're more familiar with it. Another option is the Audible Manager software where users can download Audible content.

In use the Dual-Play lacks some dynamic range. Most of the test tracks could have done with some fattening of the tones and the EQ settings don't really affect the music that much. Strangely enough, there was no "classical" setting. Yet the Dual-Play, for these faults, is enormously appealing for the versatility of the cassette metaphor used.

✓ Tiny size	Contact Compaq
✓ Supports Windows Media Player, bundled with MusicMatch Jukebox	Phone 13 23 93
✗ Limited LCD display	Online www.compaq.com.au
	Price \$499

✓ Convenient cassette form	Contact Rome Technology
✓ Durable construction	Phone 1800 997 663
✗ Ordinary listening quality	Online www.rome.com.au
	Price \$495

MEGA DIGITAL MUSIC GUIDE



Nex II

This is a revisit for the Nex II which was first looked at by APC in the October 2001 Labs Challenge. What we said then still applies now: the Nex II is still an impressive music player with some unique characteristics.

This is the only player in this lineup which uses Compact Flash (CF) memory which, depending on who you speak with, is either old technology or one that's set to explode. At this point the maximum amount of memory available using CF II is 1GB, courtesy of the excellent but expensive IBM microdrive. Smaller capacities in solid state CF are also available. As the player does not have any internal memory and Rome do not bundle any with the player — anyone tempted by the Nex II has to consider buying some memory to go with it.

While the prospect of 1GB of storage in such a small form factor is attractive, bear in mind that a microdrive is a mechanical disk drive and drains battery juice significantly compared to solid state CF storage.

Still, a Nex II with a gigabyte on board is a sight to see. A full gigabyte of storage makes it worthwhile to think of the Nex II as an alternate storage device — as Windows sees the Nex II as just another drive. Any files (whether music or not) can be dragged and dropped to and from the Nex II. Alternatively if you just want the Nex as a music player then Windows Media Player is all you need to access and download.

The fashion conscious can play with a range of interchangeable skins that come with the Nex. Five come with the player and extras can be purchased. Users can also update functionality because it is flash upgradeable. If only it came with a radio tuner and voice recording . . .

Nomad IIc

This is the one of the latest models to emerge from Creative Labs but doesn't provide the "bigger, better, more" features of product progression you would expect. In fact this is the entry-level model although the shell is identical to the Nomad II. Internal memory has been cranked back to 32MB from the Nomad II's 64MB and there is no FM radio tuner built-in, but the voice recording capability is still present.

Operation of the Nomad IIc is child's play, with a simple dial in the middle of the front face and a smattering of buttons around the rest of the body. Access to the SmartMedia slot is through the battery recess which is not convenient if you like swapping and changing cards but keeps the classic pocket music player lines intact.

The Creative PlayCenter2 program is the core of the suite of applications Creative always bundle with their products. On the one hand it has a simple media player guise — but plug the Nomad in and full functionality with the player becomes apparent. Optional settings allow the user to select ripping and encoding and ID3 tagging options in an easy to follow way. It also offers connectivity with the online CD Database so the fiddly work of tagging all tracks is taken away from the user. The LAVA player and Media Ring Talk also included on the CD are window dressing.

You'll have to invest in your own cans as Creative have not supplied any ear or headphones, which if you're serious about your listening is probably the course you would take anyway. With only 32MB or onboard memory, it would be advisable to get a SmartMedia card as well.



✓ Adaptable for multiple codec music and data

✓ Windows Media Player compatible

✗ Issues with the jog dial control

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• SMART-BURN (Smart Monitoring & Adapting Recording Technology-for-Burning). To get the best burning quality & reliability with smart burning strategy such as media condition check, vari-speed burning, running OPC & buffer under run free technology

• SMART-X (Smart Monitoring & Adjusting Read-speed Technology-for-extraction). CD-DA/VCD data extraction speed will increase or decrease by host system demand (lower for playback or higher for copy) & media quality condition

SMART-BURN
SMART-X



40x12x48x



Rome Juli

Even though it looks like a toy and designed to be worn like a pendant on a string around the neck, the Juli is a remarkably proficient music player. Packed in its confines is 32MB of flash memory which is not very generous but the player does have the provisions for not one, but two MMC cards for further memory expansion. Like the Nomad II and Nomad IIc from Creative Labs, the Juli hides the memory expansion cards in its battery compartment making it a bit of chore to access.

Operating the Juli is pretty basic with the usual range of functions. There is no programming option available, so anyone stocking extra memory will have to play through the internal flash memory contents before automatically shifting to the flash card/s.

Rome have stocked the Juli with music from MP3.com.au so it's ready to go out of the box. The accompanying CD contains the Juli Master software interface for the Juli and there's nothing too exciting about it. The two panes show the host system and the contents of the Juli or its MMCs and transferring files onto the player is just a matter of dragging and dropping from one pane to the other. The Rome II Master used on the Rome II is identical in look and feel. Downloading appears to be slow although no formal timing tests were conducted.

Users who like seeing a busy LCD will be disappointed. All that is displayed is the playing status, time elapsed, track number and a tiny battery and volume gauge. It sounds remarkably good for something so small and delicate, whether using the appropriate EQ settings or on its default. Just don't leave it on the floor or someone will tread on it and you can kiss it goodbye.



- ✓ Tiny size
- ✓ Dual MMC expansion
- ✗ Fragile construction

Contact Rome Technology
Phone 1800 997 663
Online www.rome.com.au
Price \$299



Sony NW-MS9

The photograph says it all. The cigarette lighter is alongside the player as a reference point to show just how small this player is. The actual weight of the solid stainless steel body is negligible, making it ideal to clip onto belt loops or use as a key ring, although connecting your key ring to your ears might look a bit odd.

There is no internal memory on the MS9: storage is provided by a memory stick which fits into a discreet hatch at the bottom of the player. One 64MB MagicGate stick is bundled in the kit.

Because of the player's size, manipulating the onboard buttons becomes a hunt-and-peck affair. It doesn't have an onboard equaliser but offers a bass booster with two settings. The NW-MS9 is also the only player with a volume equaliser which prevents volume overload and the potential for damage to the listener's hearing.

As Sony is a major player in the recording industry, this side of their interests is protected by only permitting ATRAC3 formatted music on the NW-MS9. ATRAC3 is the final building block in the implementation of Sony's SDMI strategy. MP3, WMA and EMD encoded music can be imported to OpenMG Jukebox, the software interface supplied, but they undergo conversion to ATRAC3 before download to MagicGate Memory Stick on the portable device. The ATRAC3 content can't be passed onto other portable players or systems and be played back.

The actual playback of ATRAC3 is very high quality, even though the bitrates used in OpenMG's encoder may seem a little odd if you're used to the equivalent bitrates of MP3. The 64MB Memory Stick will hold about one hour's music encoded at 132Kbit/s which surpasses CD-quality sound. The usual translation used is 96Kbit/s under ATRAC3, which is equivalent to 128Kbit/s under MP3.



- ✓ Compact size
- ✗ Only ATRAC3-encoded music
- ✗ No internal memory; external memory expansion by MG Memory Stick

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Yepp YP-NEU

Samsung's other offering in its Yepp product line is the mid-range YP-NEU. Its vital features and functions are more in keeping with the mainstream portable players and would appeal to more than those simply interested in the smallest and lightest player.

The YP-NEU is still very pocketable and available in two fluorescent colours: yellow and blue. Control of the YP-NEU can be done through the simple navigation buttons on the unit or an odd-looking barrel-shaped remote control. The display on the remote shows time elapsed, track number, battery level, EQ setting and the play cycle. The latter two functions can only be controlled from the remote.

There's a slot for a SmartMedia card at the front which will allow expansion beyond the 32MB that the Yepp comes with. Blame the iMac if you like, but Samsung have also made the fluoro plastic translucent so you can see the SmartMedia reader underneath the shell — not a particularly appealing sight. There is also a version of the YP-NEU that comes natively with 64MB onboard.

The same software that appears with the YP-20 model is included with the YP-NEU including Real Jukebox for managing, ripping and encoding your music. Like the YP-20, the best thing to do after purchase is hop online, go to the Samsung Yepp site and download the updated Yepp Explorer. Yepps also support the SecuMAX copy protection system meaning files encoded with this security mechanism will play.

Users will appreciate the sound of the YP-NEU which has a equaliser that works well across all musical styles. The only real wishlist items are if the Yepp could somehow be recharged or played with mains power, and if it could be used as a general storage device for data other than music.



- ✓ SmartMedia expansion
- ✗ Relatively expensive
- ✗ Non-rechargeable batteries

Contact Samsung Electronics
Phone 02 9763 9700
Online www.samsungyepp.com
Price \$349



Samsung Yepp YP-20

The YP-20's one and only claim to notoriety is its size. Shaped roughly like a teardrop, the YP-20 is a slip of a thing designed to be worn as a pendant around the neck with earphone wires doubling as the pendant chain. The arrangement works although there are other issues to the YP-20.

Chief concern is the absence of an on/off switch. It operates solely on a single AAA battery and to turn the YP-20 on is a matter of fitting the battery — turning it off means popping the cover off the battery recess on the back of the Yepp and removing it. It's an awkward arrangement that is inexplicable. Some might argue that the device draws little power anyway so leaving it switched on is not an issue but regardless, including a switch is not rocket science and won't add hundreds of dollars to the price.

Other disappointments include only 32MB memory onboard (where most of the solid state players have standardised on 64MB) and no option to expand through a memory slot; a tiny LCD display which by default tells the time elapsed, track number and battery level but no ID3 tag information about the current track being played unless you hold the mode key down. There are four EQ presets and programmable play.

The Yepp Explorer software interface is simple and limited in scope. Tracks for download are queued but there is no precise way of knowing whether the internal memory onboard the Yepp is sufficient until the download is commenced. There is another replacement application available for download from the Yepp site which feels a bit more modern with a little more functionality. Thankfully Samsung have also bundled Real Jukebox for ripping, encoding and managing music. The saving grace for the YP-20 is that it doesn't lack anything in music playback quality across most styles.



- ✓ Tiny size
- ✗ No power on/off
- ✗ Limited internal memory; no memory expansion

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LIKE ANY MARRIAGE THERE'S BEEN SOME UPS AND DOWNS, BUT THE UNION OF MP3 CAPABILITY WITH PORTABLE CD PLAYER IS JUST AS MUCH AN EXERCISE IN MARKET ECONOMICS AS IT IS IN TECHNICAL INNOVATION.

Now that there's a respectability about MP3, technologies other than flash memory are being explored for storage of the format, notably the CD-MP3 player. The compact disc is an ideal medium for digital music. A full 5.25 inch audio CD translates into approximately 74 minutes of sound, but when used to store MP3 audio encoded at a standard 128KBit/s, the capacity works out to over ten hours! This means many people could fit the personal highlights of their entire music collection onto a single CD and never need to swap discs out of the player.

Several names in the consumer electronics space agree MP3 CD is set to explode. Where solid state players approached the playback of music from the IT perspective, the white goods vendors lacked commercial expertise with newer sound encoding technologies. CD is a technology they are familiar and comfortable working with.

By its nature a music player based on a CD-drive is dramatically heavier than one based on solid state memory. And with the use of moving parts, serious considerations have to be made to improve battery life and prevent track skipping — problems confronted when designers first turned their attention to the ubiquitous CD Walkman.

In truth, all of these hardware playback devices have a common ancestor in Sony's original Walkman. It had an AM/FM tuner, stereo cassette player, sounded great for the time and they went out the door in droves. Just why the popularity so far of MP3-CD players has failed to repeat the overwhelming nature of the cassette Walkman phenomenon is a puzzle, but there's a few points to check when looking at a portable CD player:

Work out how much to spend on a player. The portable range covered in the next few pages range from \$200 to \$459. Make sure that you're only paying for what you need.

Will you be simply playing audio CDs or will you rip/encode/burn to CD? If you're burning to CD then it is desirable to have a player that will read nested directories so your tracks can be

arranged by artist, album or genre instead of lumped altogether in alphabetic order in the root of the CD.

How important is information on what you're listening to? Most of the CD players come with a remote control with an LCD readout. The better players display both more information and present it in a more user-friendly manner, but it comes at a cost.

Multiple codecs? All of the CD players here accommodate CD and MP3 — but what about WMA or other codecs? A flash upgradeable player is desirable, giving the owner the ability to accommodate new codecs as they become available.

All CD-based players suffer from skipping when the player undergoes shock or jarring impacts. Anti-skip buffering is available on all models shown. Some have enormous protection, like four minutes' worth while others will only give ten seconds. Locating wherever possible the CD player away from positions where it is prone to bumps and thumps is advisable wherever possible. ■



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iRiver SlimX

This is the iRiver flagship model, the player with everything and it is priced accordingly. In the overall scheme of the CD music players on show here the SlimX is an outstanding contender.

For starters, the player is remarkably slim at a mere 16.7mm in height. Weight is minimised as a result, but there is no compromise on functionality. If you're separated from your CD collection, iRiver has even fitted the SlimX with an FM tuner. Otherwise it plays CD, MP3 and WMA including files in nested directories. With upgradeable firmware, any new codecs that come along in the future can also be catered for.

Operating the SlimX necessitates using the tethered remote which is the only way of getting feedback from the unit. Control buttons are on the body and the remote but there is no LCD on the SlimX. The remote has a comprehensive three-line display that adjusts depending on what is playing at the time, whether it be an audio CD, MP3 or WMA CD or FM radio. For MP3 CDs the information is comprehensive with folder/album name, track name or filename, file type, sampling rate, encoded bitrate and volume levels.

The jog dials for navigating and selecting the functions can be a bit confusing as they duplicate functions depending on what media is played. One false button press and the user is thrown out to the menu to go through the process again.

Though battery life was not tested, the anti-skip buffering and performance playing CDs under the supplied NiMH batteries was impressive. Overall the SlimX is the slickest, most portable and feature-rich player in the lineup, only bettered by the superior sound quality of the Waitec Havin and MPZoo Exonion.



- ✓ Wafer thin and light
- ✓ Multiple CODEC support
- ✓ FM tuner

Price \$459
Contact Rome Technology
Phone 1800 997 663
Online www.rome.com.au



iRiver iMP-100

There's no fancy name for this iRiver CD player but it falls into the category of players targeted towards a younger listening audience. Like all players in the iRiver range there are some functions and features common across all models, such as: multi-CODEC support for CD, MP3 and WMA; line-out jack for playing through an external amplifier; and flash upgradeability of the firmware.

It has a chunkier profile than the SlimX model with a rounded cream and sky blue appearance, more on a par with the other portable CD players in the roundup than the super slim proportions of the SlimX.

There's a tethered remote for the iMP-100 which doesn't have an LCD, instead users need to refer to the display on the clamshell for feedback on the device.

There are three generous lines of display but the lowest line is dedicated to some simple animations of what looks like silhouettes of people dancing (which is a pity as it's a waste of the space). The display shows the track number and time elapsed when playing CDs and adds the song title or filename, file type and artist when playing MP3 or WMA.

The onboard controls and menus are straightforward including programmable playback of up to 255 tracks. Listeners can also scan the first 10 seconds of every track or jump 10 tracks forward. WMA and MP3 CDs can have their tracks nested as the operating system supports a directory structure on the CD.

One particular complaint that needs to be addressed is the battery cover. The slightest bump on the hatch on the underside of the clamshell pops it open. Thankfully the two AA batteries won't fall out unless prised. Some sticky tape fixed the problem for us.



- ✓ Multiple CODEC support
- ✓ Excellent programmable play options
- ✗ Battery hatch pops open

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Waitec Jammin

This model is Waitec's entry-level offering, and is quite possibly the cheapest portable CD player capable of playing MP3 audio. Most of the Jammin's appeal is associated with its \$200 price tag but there will also be those attracted to the bright translucent orange colour scheme, unashamedly pitched to the iMac-envious.

There's a small LCD display mounted on the bright orange top with all the control buttons concentrated in one location. However, underlying the display are a number of unsightly circuit boards embedded in the lid of the clamshell.

It's identical in look and feel to the Funky with exactly the

same functionality, including the same programmable playback, EQ and anti-skip options.

The display information does not compare against the Havin, providing only basic information like the track number, time elapsed, skip protection and EQ for CD or MP3. No ID3 tag information is displayed.

The difference between this model with the others in the range is a tethered remote control has not been included with the Jammin. Interestingly enough, the remote for the Funky won't work with the Jammin which suggests a firmware difference between the models.

Another curious point was a dual stereo output cable for the line-out jack. The other Waitec models all have line out jacks but only the Jammin came with the cable included meaning operation is then is restricted to the onboard controls.

Anti-skipping is automatic for MP3 but must be enabled for audio CD, providing 40 seconds' protection. Budget players like the Jammin are more prone to skipping but during its stay at APC there was no instance of this occurring. In spite of such deficiencies the design and look of the Jammin should appeal to younger users.

✓ Excellent value	Price \$200
✓ Limited Vitaminic membership	Contact TE Australia
✗ No remote control	Phone 07 3488 1000
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Waitec Funky

The bright green Funky is only a little different to Waitec's Jammin model, but is a bit more upmarket and refined in its features. The fluoro plastic lid, similar to Apple's iMac, is more discreet than the orange lid of the Jammin. However, the same LCD display and underlying PCB as the Jammin exists on the Funky.

Thankfully the translucent base of the Jammin is replaced by an opaque material on the Funky so you don't see the rest of the drive's innards on the underside.

Although the onboard controls of the Funky are the same as the Jammin, the Funky boasts a tethered remote control, also clad in green. Unfortunately, there is no LCD on the remote but all the functionality seen on the other Waitec models is otherwise similar. The menu structure is based around the Mode button and this can sometimes make navigation awkward.

One feature that is often neglected is the line-out jack. Some players offer it and others don't. This model is the same as the other Waitecs with a line-out plug making it easier to integrate into a hi-fi system or play it through the PC sound card.

Like the Jammin, the Funky does not come with a carry bag or pouch but has a carry strap that loops onto the device. The player only plays CD and MP3, like the rest of the Waitec range, which is a pity as future directions seem to indicate other codecs will become more and more prevalent.

And like all the Waitec range there is good value (and smart thinking) in the introductory three-month membership to Vitaminic (www.vitaminic.com), a service which allows its users to download music to their heart's content without fear of infringing on an artist's copyright.

- ✓ Cool looks
- ✓ Attractive price for the functionality
- ✓ Limited Vitaminic membership

Price \$275
Contact TE Australia
Phone (07) 3488 1000
Online www.teaustralia.com.au



Kenwood DPC-MP922

Kenwood has existed in hi-fi circles for a long time so it was a natural extension of their merchandising will for them to include personal audio in their product range. The DPC-MP922 is one of the fruits of this approach, and while there are some nice features incorporated in this model, there are other aspects which make it appear a generation removed.

It's a clean-looking, plain but elegant beast which feels light in the hand. Embellishments like navigation buttons and functions are kept to a bare minimum. CD, MP3 and WMA formats are supported and the player will accept mixed nested CDs meaning CDs with files in nested directories can play.

The LCD reads out the file name instead of the ID3 tag when playing, time elapsed, the play cycle (random, repeat, etc.) and bass boost status. Curiously there is an indicator for when the battery is recharging but no indication when it is running on battery or the battery level.

The most notable omission from the Kenwood is equaliser presets, instead the player has a bass boost function. As a consequence without the bass boost the playback sounds flat across heavier music styles and thin in softer styles. With the bass boost enabled, the sound quality becomes muddy.

However the DPC-MP922 does come with a raft of accessories. There is a car cigarette lighter adaptor to power it in the car but if you need longer battery life away from a recharger, an extra battery pack that piggybacks onto the back of the unit is included. Also bundled is a cassette adaptor, not quite like the M-Any Dual-Play, which slots into a car cassette player when connected to the portable unit and plays music through the car stereo.

- ✓ Cassette, backup battery and cigarette lighter adaptors
- ✓ Multiple CODEC support
- ✗ Dated feature set

Price \$499
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Online www.kenwood.com.au

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Waitec Havin and MPZoo Exonion

The Waitec Havin and the MPZoo Exonion are the one and the same. Havin is the name of the Korean manufacturers of the MPZoo product. Waitec claim to be the manufacturer for their model while MPZoo has stuck their own moniker onto the product and re-named it. Confused? Don't be, as all that really matters is that these are superb music players.

Externally the only differences between the Havin and Exonion is the Havin's blue trim. In use they are identical, even to the extent of the manual. The same FIF (File In Field — a naming convention that works in conjunction with embedded ID3 tags)

system for identifying tracks is used making it a simple exercise identifying tracks from the filename, and the same utility program for renaming the files is bundled in both kits with MusicMatch Jukebox. The only difference between the two is that the Waitec includes the three month Vitaminic (www.vitaminic.com) music download club membership.

Operating the Havin/Exonion is simple, progressing through the menus via the direction keys on the body of the unit. There is a tethered remote for the player but it's easier making configuration changes from the body of the player.

The display is one of the busiest when playing, showing title, artist, genre, folder and playlist — in fact, just about everything barring the lyrics (now there's an idea!). Also available is the option to select tracks that will display a screen full of track names in order.

MP3-CD players are not all the same in sound, and these two are simply the best-sounding CD players in this selection. For some reason there is a balance in the Exonion/Havin that the others lack and the equaliser settings are appropriate for the musical styles. The Havin/Exonion players don't do anything but play music, but they do it in style.



- ✓ The best sounding CD player
- ✓ Comprehensive display
- ✓ Simple user interface

Price \$399 (Exonion)
\$450 (Havin)
Contact MPZoo (Exonion)
TE Australia (Havin)
Phone MPZoo 03 9532 9888
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CREATIVE

MINI REVOLUTION

WHILE MOST ATTENTION IN MP3 HARDWARE IS FOCUSED ON THE CD PLAYERS, A GROWING NUMBER OF 8CM MINI CD DEVICES IS MAKING A MARK. APC CHECKS OUT THE LATEST AND GREATEST.

Not to be confused with Sony's MiniDisc technology, the Mini CD is just a change in size from the standard 5.25in CD. Physically everything is the same, only their capacity is reduced to 185MB or about 22 minutes worth of CD audio.

Most recorded albums will surpass 22 minutes, so if you were thinking of burning entire CDs to the smaller sized disc then you can forget it. Even copying individual tracks to a "best of" compilation in audio CD format is not a very economical use of the media. Rather, the media is best used to create MP3 or WMA compilations where you can still fit 3 hours of 128Kbit/s encoded MP3 onto the Mini CD.

With the reduction in usable capacity in the media, the question that needs to be asked is: why bother with a smaller form of the familiar CD that we all know and love? The answer is simply the size factor. The 8cm diameter makes for hardware devices that move from the "portable" label to "handheld" or even "pocketable" that will fit into a breast pocket at a pinch. Try that with a normal CD!

Audio titles on Mini CD are hard to find — most examples seen are singles or special remixes or promotions. The popularity they enjoy in Asia is a phenomenon not quite replicated on these shores. The CD business cards seen mainly as a promotional tool are usually Mini CD capacity. They are identical to the regular CDs except they have corners.

Most regular 5.25in CD players will accommodate them as the CD nests in the inner ring indentation found on the tray of most CD drives. They will not fit into 8cm CD players.

If pressed Mini CD audio titles are hard to find then so is the blank media. Not all the media manufacturers supply the smaller variety. Sony is one company that comes to mind. They are usually sold in smaller packs and work out more expensive than regular media.

Imation quotes \$13.95 for their 5-pack of blank 8cm media which works out to \$2.79 per blank. Don't think you can save by using a rewritable CD over and over again: no one brings

out 8cm blank rewritable media. Due to the dearth of Mini CD titles you may be effectively restricted to burning your own mixes. Thankfully most modern CD-R and CD-RW drives will happily recognise the smaller capacity. ■





Imation RipGO!

The beauty of Mini CD-R drive devices like the Imation RipGO! is that they can sit dormant while connected to a PC and can burn on-the-fly whatever you choose to squeeze onto the 185MB capacity of the media. It's a three stringed bow. After installation, the RipGO! appears in Windows Explorer as a CD-R drive and with the added functionality of a music player, the devices become irresistible.

Extras on the CD bundled with the RipGO! include Nero Burning ROM for CD mastering, Media Jukebox for ripping, encoding and managing music, plus some sample tracks.

CDs were burnt at 4x speed. Operating the player was a snap as the basic controls and menus follow convention. Sound quality was excellent and the players have five EQ presets — including one called Salsa for Latin music which looked curious. The player plays back CD, MP3 and WMA, are flash upgradeable and support nested directories. People with large craniums will also appreciate the generous size of the headphones included.

The only problem APC encountered was when the battery fell out of the bottom of the unit, while the player was sitting on a desk! This was due to the fact that the clips that retain the battery tend to not click into place.

The asking price might be daunting if you're paying for a burner and CD-ROM storage device, but becomes utterly appealing when it can be unhitched from the computer and pocketed as a music player.



- ✓ Drag and drop files to a mini CD-RW
- ✓ Complete software bundle
- ✓ Easy to use

Contact Imation (RipGO!)
Phone 02 9479 9086
Online www.imation.com
Price \$599



Philips Expanium eXp401

The Expanium 401 is a classic example of a first generation CD player device which lacks the features of the Waitec HipHop (an out-and-out music player) or the RipGO! (which double up as CD burner).

The included remote control is handy and the navigation controls on the remote are very basic. The only awkward aspect was the volume dial, which is sometimes hard to feel, recessed behind the face of the remote. Program play, 100 second anti-skip and all other functions are only accessible from the body of the Expanium 401.

The all-important sound quality is lacking, the culprit being a lack of any equalisation adjustment apart from a bass boost which fills out the bottom end but still leaves the mid-range thin. Codecs supported include MP3 and AAC — a secure format promoted by Philips. While it's an acknowledged standard and one that loses nothing against the MP3 standard, it would have been preferable for Philips to offer WMA support as well or in preference to AAC.

MP3 CDs play with nested file directories on the eXp401 which is handy. Navigation by arranging the music in albums is the most practical way of arranging the music. A rocker switch on the player allows tabbing between directories organised as albums. Unfortunately, the LCD display only shows the track number and time elapsed when display of ID3 tag information would have been infinitely more useful.

There is also a concern with the battery life of the player as the eXp401 only uses a single AA battery. While APC wasn't looking to test battery life, all the other CD players came with more than one battery. Philips did not provide APC with a power adaptor for the player although it is sold with one, and the eXp401 used up several batteries over the course of testing.



- ✓ Reasonable size
- ✗ Flat midrange playback
- ✗ No EQ presets

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HARD CHOICE

ALTHOUGH THE PORTABLE HARD DISK MUSIC PLAYER ISN'T A NEW CREATURE, THE TECHNOLOGY IS GOING FROM STRENGTH TO STRENGTH. HERE'S A HANDFUL OF THE BEST...

Music players based on hard disk storage have been around for a while although they haven't enjoyed significant popularity. This is strange when you consider the biggest issue with portable music players is the amount of storage you can take with you. A hard disk will easily surpass solid state and CD for capacity. Hard disks allow for gigabytes of storage while a gigabyte of flash memory in any format would be — well, you just wouldn't consider it.

Most hard disk players serve as dual function devices. We are looking at them as music players but you might really be looking for some convenient external data storage for backing up, archiving or transporting from site to site. Music playback is a nifty bonus.

The players seen here, apart from the Iomega HipZip, all take 2.5in notebook drives which are the best equipped for low power requirements, shock resistance, heat and noise, all of which will affect a portable music player's performance. With capacity not part of the decision-making process of buying a player the differentiators between the players is very much a battle of the features.

Hard disk players are not cheap but they offer the advantage over solid state players of capacity, and the advantage over CD players for both capacity and convenience. ■



Apple iPod

APC was impressed with the Apple iPod earlier this year (APC February 2002, page 28), and matched against the opposition this time around, it looks even more impressive.

Even though the iPod is specially designed to complement Apple's Mac and its iTunes software a third-party developer, Mediafour Corporation (www.mediafour.com), has offered ubiquity for it by developing XPlay, an iPod file manager for Windows.

XPlay worked without a hitch. It just about mirrored the facility of iTunes on the Mac by exposing the iPod as a drive device in Windows Explorer. Drop down folders allow you to see the MP3 content under playlist, artist or album (if the ID3 tags are in order). You can then drag and drop MP3s or data files to the iPod. MP3s get tucked into their appropriate pigeonholes under the artist and album. You don't get the option of uploading from the iPod under XPlay.

A fact that is glossed over sometimes is the iPod's FireWire interface. Downloading to the iPod is lightning fast and for anyone accustomed to flaky downloads to first-generation players using the parallel port, FireWire is a revelation. Another part of the allure of the iPod is its recharge through the FireWire cable meaning you may never have to use the dedicated power adaptor that comes with the unit.

Apple users might be blasé about the elegant, efficient industrial design of the hardware with the dial interface but nothing beats this usability. With XPlay, Windows users can have the same experience but they'll have to get over the prohibitive price tag and think about installing a FireWire card into the PC if one isn't present already.



- ✓ Elegant interface
- ✓ Drag and drop file management
- ✗ Expensive

Price \$895

Contact Apple Australia

Phone 13 36 22

Online www.apple.com.au



Pocket mStation

The Pocket mStation almost didn't make it into this review. Originally the distributor sent the unit without a hard disk, which was also their plan for distribution, leaving it to end users and resellers to source their own drive. After sourcing a refurbished 800MB 2.5in notebook drive kindly supplied by Toshiba, it failed. Then Mstation Technology fitted a 4GB IBM drive to the player and it worked.

Apparently it will only accept modern notebook drives of 4GB or more. Older drives add bulk, don't sit in the drive bay on the underside of the Pocket mStation comfortably, and draw too much power. There were no issues once the new drive was fitted. Best of all Mstation Technology is offering the player with a drive for the same price as they originally quoted, without a drive.

The mStation is not a svelte pocket-sized creature, being bulkier than any of the other devices in this category. For anyone who finds hunting and pecking at the tiniest portable gadgets a pain then they'll welcome the mStation, which offers generous control buttons and a big LCD. There was a noticeable lag between pressing a control and execution. During play the artist, album and track title are prominently displayed with the EQ setting, volume, time elapsed and total time of the track.

A copy of Real Jukebox Plus is bundled with the mStation for managing your music on the PC while Windows Explorer is the conduit for dragging and dropping to and from the player.



Archos Jukebox 6000

This is a 6GB hard disk player which as a music player, well, it makes a good hard disk. OK, that's cruel as it really is quite a good sounding player with a nice set of headphones instead of ear buds. The Archos Jukebox 6000 is solid, bulky and about the size of a packet of cigarettes. Its aluminium construction, rubber shocks on the corners and austere looks give the idea the Jukebox 6000 is a data carrier and not something to be rocking and rolling with.

MusicMatch Jukebox is bundled with the Jukebox 6000 for ripping, encoding and playlist creation, but squirting MP3s and M3U playlists down to the Archos Jukebox is a manual drag and drop operation.

Operating the Archos Jukebox is simple as there are not many options made available to configure and set. In playback the Archos will allow you to play all tracks, an M3U playlist downloaded to the player or the contents of a single folder or album. Programmable play offers random, single play and repeat options.

A wishlist for this product would include an integrated music software interface (or compatibility with Windows Media Player or another third party package), easier access to the batteries which were difficult to change, and a remote control.

Cheaper and roomier than the iPod, it lacks finesse of both the iPod and the Nomad Jukebox, however, as a simple non-application specific storage peripheral the Jukebox 6000 is a handy brick to have around whether for Windows or Mac.

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	Online www.mstation.com.au

✓ 6GB capacity	Price \$699
✓ Drag and drop from Windows Explorer	Contact Advanced Portable Technologies
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Peter Mayes is one half of the Sydney electronic dance outfit Pnau. Last year the band won an ARIA for Best Dance Release, and their debut album, *Sambanova*, has gone gold in Australia.

"I played in a lot of bands at school, but Pnau was what really got me started with the technology — and with the music industry," he says.

"I started writing music on a Pentium 75 in 1994. I have always been a PC-user, partially because they are much better value. I'm not a PC expert though," Mayes stresses.

"Computers for me became really powerful when I had the technology to record a whole lot of audio on them, that's when it really took off. It really became affordable two years ago — you can put together a system that will rival a professional system costing \$25,000, for less than \$10,000.

"The software I'm using at the moment is by Steinberg and it's

called Nuendo (see "Sound Advice" box). It has a really clever file structure where you can see all your audio visually, which makes it very powerful for arrangements.

"If you look at it in purely technical terms, a program like Nuendo has essentially the same kind of facilities as a \$500,000 studio.

"Every day I find myself doing more and more in terms of software. It gives people with no money the ability to make tracks which are worthy of release, which is really cool. If programs like Reason were around eight years ago, I would have been putting out tracks from my bedroom when I was in my teens.

"Technology is like anything, it's just a tool with a person behind it, and the imagination behind it's going to be what drives the music. Technology does make dance music easier, but at the end of the day it's down to you and how you use it."



THE RIGHT MUSICAL BLEND

Triple J recently ran a competition which asked budding electronic artists from around the country to send in one of their tracks.

Tim Tompson had been writing music on his PC for just a month when he was announced the winner. For taking out the top gong, the 17-year-old from Mittagong, who works under the name "DJ Blend", will have his track appear on a compilation CD — featuring artists such as Groove Armada and Kenobi. This is due to be released in November.

"I didn't hear about competition until four days before it closed. I had been fiddling with the track up to about a week before. I don't have a CD burner so I had to put it on a Zip disk and take it to a friend's house to burn before I could send it in.

"During the holidays I had been listening to dance music and thinking, 'It can't be that hard to make.' So I went down to the

shops and got some software.

"The software I use is called eJay Hip Hop 2. It is really simple. It's not really writing music, but it has 3500 different sounds, and you can alter those sounds with the pitch and resonance. Then you just move them into a song.

"I have had a PC at home for five years and I have always been fiddling on it. I have a Pentium III 550MHz and shocking little speakers. I couldn't really hear the bass when I did the song. So I'd get my friend to burn the CD, then bring it back and listen to it on the stereo.

"It would be cool to set up a home studio. I don't have any money at the moment — hopefully I get some royalties from appearing on the CD."



Nick Littlemore and Peter Mayes (right) of Pnau



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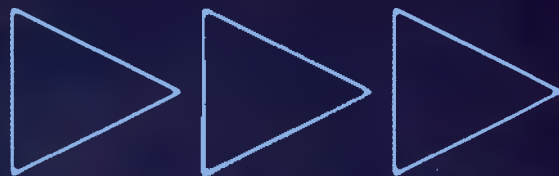
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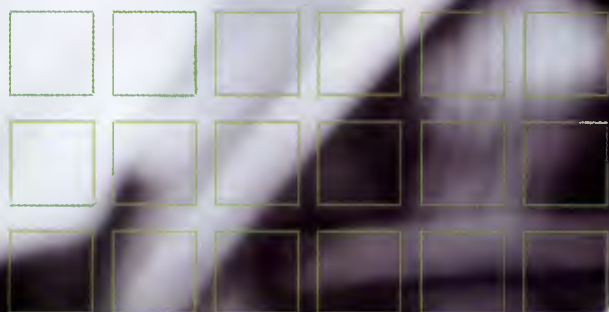
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Sameer Sengupta, a.k.a. Pocket

POCKET: THE PC FAN

Currently recording under the name Pocket, Sameer Sengupta has played at every major dance festival in Australia, including Happy Valley, Mobile Home, Vibes on a Summer's Day and the Big Day Out. His dad, ironically, was instrumental in his career path.

"The reason I got onto PCs was that my father was a design engineer for IBM, so I was exposed to PC brands from the early 1980s. I learnt a lot about their configuration. I also did computer science.

"A few years ago, if you were a creative person, you would be using a Mac. Now, software is available for the PC too, and I think that PCs are a lot more cost-effective — particularly if you are getting started in a home studio," he explains.

"The way the electronic music genre works is that new, or sub genres, develop. One of the most prominent reasons is because of new enhancement technology in hardware or software. For example a new plugin will come out which spawns a new sound. Everyone will be apprehensive initially, then someone finds a way to make it commercial by putting in a memorable element.

"A lot of the drum'n'bass producers from the early 1990s started making music the way they did because a sampler at the time allowed the manipulation of a drumbeat in such a fashion. So it spawned a genre, and now you can write that genre using any bit of software or hardware," he notes.

"I use Logic. I switched over about a year ago. It's very stable on PC platforms. I have a Pentium III desktop for the studio — the studio machine has to be very solid as well as cost effective."

Sengupta also claims the music industry has a misunderstanding of technology. And he makes a good point. "Kids these days don't want to go out and buy guitars, they want to buy turntables or samplers."

TIPS FOR A D-I-Y HOME STUDIO

"Software is definitely the most cost-effective way to get sounds cheaply," observes Peter Mayes. "Reason is like a studio in a box. It's very musical in the way it has been designed — especially if you write dance music. It's a software program that imitates a whole lot of older hardware devices that have really excellent interfaces for creating beats and synth sequences," he says.

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Melbourne: (03) 9540 8555 Sydney: (02) 9748 8811 Adelaide: (08) 8340 3740 Perth: (08) 9477 5440 Darwin: (08) 8981 9111



"Reason has tried to keep the hands-on feel, to try and emulate the ease of use for some of the drum machines and the synths from the 1980s, and they have put it into a whole program where it's all connected together. It's like you don't have to know where all the cables should go in a full studio," observes Mayes.

Sameer Sengupta meanwhile takes the view that the price of CPUs has dropped relative to the power. "The CPU can now handle software, plugins and a hardware synth at once, so your composition levels have just jumped through the roof.

"For \$2,800 you can buy yourself a 1.4MHz machine, and the best thing is to get a regular Intel chipset. I have a 966 chipset with an Access motherboard. You wouldn't want to get anything less than 256MB of RAM. For professional levels of sound production you want to get about 384MB-256MB. That's ample but don't go lower," warns Sengupta.

"Now, you can get into it real cheaply with a computer and a program like Cubase or Logic and a couple of virtual synthesisers. You can do that for \$2,000, and then you have a whole lot of synthesisers and a sampler and an audio program. Essentially you can have in software quite cheaply what a lot of people pay thousands of dollars for in hardware these days. Also, get yourself a burner," he says.

"Get on the Internet and download a number of demo

versions of programs. Go to Sonic Foundry (www.sonicfoundry.com) and get Sound Forge. It also has Acid PRO, which is a really good loop-generating program to create drums, and great little bass lines. It can actually process it in real time while it's playing back, so you can jam with it.

"The other site to go to is Propellerhead Software (www.propellerheads.se). It makes Reason. It has a sample playback thing, a bunch of reverbs and delays in it, and it has got a mixing desk," he says.

"You can write music in something like that. It will read standard wav. files, and if you have a library of them — drum sounds, bass noises, people singing, or samples from movies — you can actually import it in to there. It's a really good entry level thing.

"Also, get a decent sound card," recommends Sengupta. "Buying a bottom of the range professional sound card is better than buying the top of the range domestic sound card.

"A top domestic card like Soundblaster Live tries to do too many things and it can draw too much on the CPU," Sengupta advises. ■



LET'S MAKE A DEAL

As A&R Manager at Universal Music, it's Dave Shrimpton's job to spot unsigned artists and develop them for release on the label. "I think records like Pnau's have set the benchmark in terms of quality electronic recording and mixing in Australia. As artists like that develop, there will be a whole range of kids growing up, buying those records, trying to reproduce those kinds of sounds, and being inspired by those sounds. It's a real domino effect.

"The standard of demos for electronica and dance is definitely much better than it was. People are still getting used to their equipment — all the new software and learning how to use it to its fullest. It takes a while for people to master some of that stuff. But the standard of stuff coming out is definitely 100% higher than it was three years ago," he claims.

"Universal has just started a new label specifically

for Australian electronica, and we are actively seeking new product to put out. But we aren't getting the volume of demos through the mail that we would like.

"Because it's a new genre, it isn't quite entrenched in the practice of sending demos through the mail like rock bands have done in the past. But as far as I am concerned, the more people that are using the technology and the more people that are sending in the CDs, the better," he says.

"It's a genre which is snowballing. What people mostly listen to now is electronically based. Even 50-year-olds are listening to ambient. People want to hear what sounds new. It's like what DVD is to video tape. VHS seems a hundred years old after only three years, and that's where electronic music has the edge over other forms. It's new and cutting edge."

If you have CD of your own material you think should be heard by a record company, send your demos to: A&R Universal Music, 3 Munn's Reserve, Miller's Point NSW 2000.

Sound advice

• ACID PRO

As a result of much of dance music being created by the recycling of sounds, a decent home recording artist requires a good loop-based music creation tool. Acid PRO allows you to create songs, remix tracks, develop music beds, score videos as well as create music for Flash Web sites. Because it's the easiest way to manipulate loops (bass lines, sampled drum beats, etc), Acid PRO is particularly popular with dance music artists. RRP: \$695.

• CUBASE

As a cross platform system, the many versions of Steinberg's Cubase have been the home recording studio software of choice for the last 10 years. With audio recording and mixing ability it can also be synchronised with other virtual instruments or other software programs, such as Reason.

As Reason has the advanced mixing effects, the choice would be to record in Cubase and then mix the recording in Reason. Third party hardware can also be plugged in — such as analogue keyboards or drum machines. Out of the box it comes with instrument and effect plugins, and virtual and analogue synth engines.

The basic version of Cubase, Cubasis, retails for \$299, while Cubase VST, the standard professional version, costs \$795.

• LOGIC PLATINUM 5

A virtual studio of professional standards, Logic Platinum 5 is getting towards the imported car-end of music software. As a composition and production system, it's similar to Cubase, however it also incorporates a digital mixer with Surround Sound, over 50 high-quality audio effect plugins, and fully-automated and sample-accurate mixing facilities.

The advantages of entering this kind of price range is that if you compose and mix at home, then the material can be transferred straight to a full studio and be ready to go. The disadvantage is that is that this end of the market features studio facilities that sound engineers can take up to 25 years to master. RRP: \$1,795

• NUENDO

As the top of the line in professional sound production, Nuendo software provides everything seriously experienced musicians and producers could ever want. It has comprehensive editing tools, everything about mixing and the broadest array of virtual effects processors. It also has direct playback of AVI, MPEG or Quicktime, and is specifically designed for the sound mixing of videos and movies. It also boasts surround sound.

However, at a recommended retail price of \$2,995 it's probably software that you could work toward — like when you have a gold record on the wall at home!

• REASON

Designed by Swedish company Propellerhead Software, and released about a year ago, Reason is the perfect all-in-one piece of software. Essentially it's a rack of virtual instruments — sampler, synthesiser, drum machine — which work as a self-contained synth studio system.

It's the best jump-off point for people wanting to set up a home studio from scratch without spending tens of thousands of dollars on hardware instruments, or the hassle of setting them all up.

Reason comes in two CDs, one of which contains a library of 600MB of licensed sound that includes hundreds of loops, drum kits and samples, as well as multi-sampled instruments. From this you can build your own sound library, as the advanced sound management system of Reason allows the database to be manipulated quickly and easily.

Reason runs on a minimum of a PII with 64MB RAM, but on this the number of devices and effects you can use simultaneously is limited. With a PIII and a high quality sound card, a studio-like rack of effects is available along with professional quality audio. RRP is \$999.

• SOUND FORGE 5.0

Rather than being a virtual recording studio like Cubase, Sound Forge 5.0 provides more capabilities as a post-production editing suite. It's a simple entry-level digital audio editor which allows you to edit audio, record audio and process effects, as well as encode media for the Internet. It's able to be combined with any Windows compatible sound card and has over 35 audio effects and processes as well as 20 audio plugins. RRP: \$695

CREATING YOUR OWN

YOU DON'T NEED A SOUND STUDIO AND A TRANSMITTER TO RUN A RADIO STATION, JUST A PC AND A NET CONNECTION.

APC FILLS YOU IN ON HOW TO GET STARTED WITH NETCASTING AND SET UP YOUR OWN STATION.

So, you've got a hard disk full of MP3s and a shelf full of CDs, and now you realise there's no point keeping all this good stuff to yourself. The time has come to play them to the world.

TO STREAM OR TO BROADCAST?

It can be easy to get these two confused. All broadcasting is streaming, not the other way around. You can play back an audio file as it downloads — that's streaming. Broadcasting, on the other hand, involves listening to audio that is being played somewhere else, maybe with some time delay, but as close to real time as possible. You can stream audio from a Web site simply by using a playlist file. A broadcast, however, will require a server and an audio source — whether it's an MP3 player or a live band.

HOW MANY STREAMS?

Most online stations give listeners a selection of streams to choose from. Lower quality streams for modem users are usually 24Kbits/s 22KHz mono, whilst broadband streams can be anything up to 128Kbits/s 44KHz stereo. When deciding how many streams to serve, you will also need to consider the number of connections you can support. For example, five 24Kbits/s streams use approximately the same bandwidth as one 128Kbits/s stream. If you are hosting from a 512K DSL connection you might be able to run five Lo-Fi and two Hi-Fi streams and still have a little extra bandwidth left over for other Internet applications.

PERMANENT OR PART-TIME?

Another question you need to ask yourself is whether or not you plan to operate the station full-time. Of course, this doesn't necessarily mean that you'll need to DJ 24-hours-a-day — that's what playlists are for! But there are other considerations, such as bandwidth.

If you are going to pump out multiple streams around the clock, not only will you need a broadband connection, but you're

also going to have to be on a high-traffic plan. A single 128Kbit/s stream is going to use at least 25GB per month. Add some Lo-Fi streams and a few extra users and you could be in for a whopping excess usage bill if you're not careful.

Consequently, you may consider operating an hour or two a day instead — especially if you are going to host your own server. Otherwise, you might be better off using a remote service such as Live365 (www.live365.com).

USING A REMOTE SERVER

Just as there are ISPs that will host Web sites, there are service providers that host radio stations. These usually require you to upload the MP3s you want to broadcast and then set the order in which to play them. This play list will then be rotated 24 hours a day. Live365 is one of the most popular Net station hosts with a 100MB package costing US\$6.95 per month.

Considering the bandwidth involved, something like this might be worth considering if you're serious about running ongoing Net radio. If uploading files to an FTP server isn't your idea of broadcasting music, then you're probably going to have to run your own server — and this isn't as tricky as it might sound.

RUNNING YOUR OWN SERVER

This is probably the most rewarding way to broadcast on the Net, and it can be as simple or as sophisticated as you want. The complexity of your setup really comes down to what you are trying to achieve. The simplest setup is to run Winamp and a SHOUTcast compatible server on your desktop and you're away. If you want to incorporate live DJing, using a microphone or other external Hi-Fi equipment, then it gets a little more complicated.

WINDOWS

There are a few options for Windows users when it comes to choosing a server. The original Nullsoft SHOUTcast server is now freely available for personal or commercial use. It is relatively easy to set up, only requiring you to edit a configuration text file with your server port, password, number of users and logging options. Alternatively, there is also the AnalogX Shout SimpleServer, which is also free, and uses an easy graphical configuration screen.

Once you have the server application running, you simply

NET RADIO STATION

install the SHOUTcast DSP plug-in for Winamp. Anything you play in Winamp through this plug-in from now on will be sent to the server and broadcast on the Net.

LINUX

If you are running Linux you can choose between a variety of servers, the most popular being IceCast and DarkIce. IceCast is an open source project that can be compiled and configured quickly and easily. IceCast will accept Winamp streams as well as a live source using the LiveIce add-on. DarkIce is a variation of IceCast specifically tailored to capture the output of the soundcard and stream it directly on the Net.

MAC

Probably the best option for hosting a Mac server is to use SHOUTcast. Although it is in beta and will only operate under Mac OS X 10.0+ and Mac OS X Server 2 10.0+, there's not much in the way of alternatives.

LEGAL ISSUES

The legal issues involved with operating your own radio station are complex. Technically, you need to get permission from the copyright owners of each piece of music you broadcast. If you use a remote service such as Live365, who have agreements with the major US record companies, then this is largely taken care of. If you are operating your own server, then you should be paying artists royalties. This is, however, a slightly grey area of the law.

To date, no-one has actually been prosecuted for Netcasting anyone else's music — which is significant considering that there are currently over 2,500 stations broadcasting at any time on SHOUTcast alone.

PUTTING THE WORD OUT

Once you have your Net radio server up and running, the next stage is to get people to tune in. Getting listed on SHOUTcast.com is a start. You might also consider using IRC, email, forums and other messaging systems to invite people to tune in.

You're now on the air. If you're using Soundcard Input instead, then you'll need to run another program or plug in an external audio device. You could play a record through your line input,

for example.

Alternatively, you could play a DVD or audio CD. Even better, run a virtual DJ application and perform a live mix! If you're not sure about your mixing skills, you can always record your mixes and broadcast the best ones in Winamp later! ■



STEP-BY-STEP GUIDE TO NETCASTING

There are four basic requirements for a Net radio broadcast. Firstly, an Internet connection that will support the number of listeners you want. Secondly, a server that will transmit the broadcast. Thirdly, an encoder that will connect your source to your server with encoded audio streams. Finally, you will need an audio source. All of this can, of course, be handled by a single computer, but there are some requirements.

If you plan to use non-computer based audio such as LPs, cassettes, microphones etc., then you will need either a duplex soundcard or two computers. These days the majority of soundcards available support duplex operation — simultaneous recording and playback — so you should be fine. Otherwise, you can use two soundcards in the same computer or, if you separate the source and server, two computers.

PLUGGING IT ALL TOGETHER

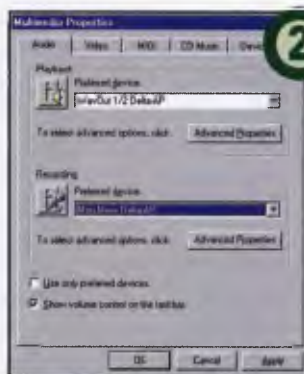
If you don't have a duplex soundcard or you choose to run the server on a separate computer for another reason, you will need to plug the soundcard output of the source computer to the "line in" connector on the server. If you are using a single PC, you will need to configure the default recording device to be the soundcard output. On a SoundBlaster Live! this is called "What U Hear" (see Figure 1).

With other soundcards, the output device will be called "Monitor Mixer" or something similar. This can be set either in the soundcard's mixer software, or using the Multimedia configuration in the Windows control panel. If you plan to use external Hi-Fi

equipment or a microphone, plug these into the soundcard's "line in" or "mic" inputs.

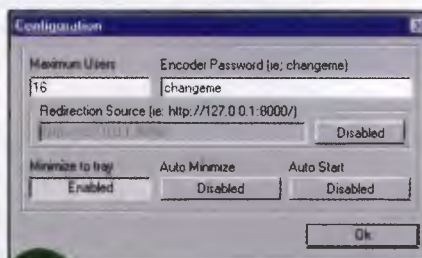
INSTALLING THE SERVER

The easiest server software to get up and running is the AnalogX Shout SimpleServer. Simply run the installer and then open the program. When you click the configuration button you are presented with four options.



Configuring the recording device in the Windows control panel.

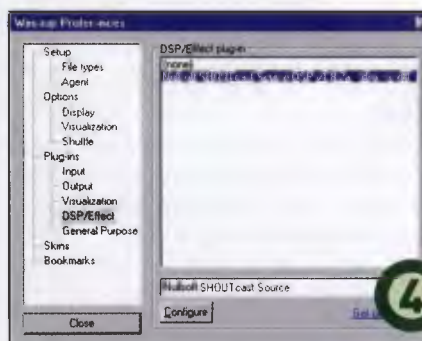
Firstly, set the maximum number of concurrent users you will allow on your server. Secondly, specify a password to be used when authenticating incoming audio streams. Thirdly, you can nominate whether to forward your stream to another



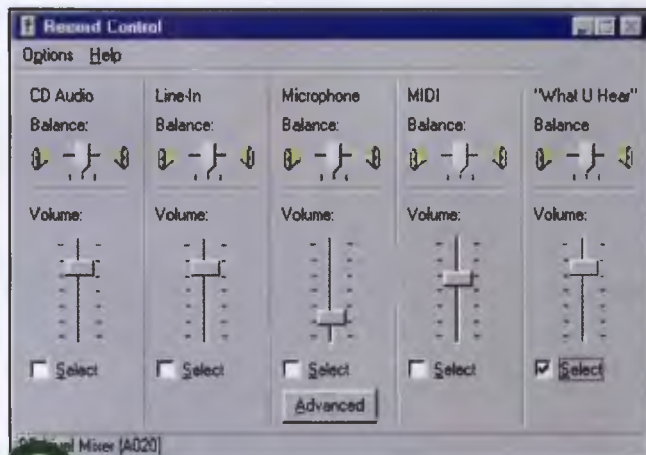
The AnalogX Shout SimpleServer configuration screen.

server. Finally, you can customise the server's behaviour — whether it should minimise to the system tray, auto-minimise, or start with Windows.

Once you've configured the server, simply click "Start" and the server will begin to listen for any incoming streams from Winamp.



Setting the Winamp plugin preferences for SHOUTcast.



Setting the SBLive! recording device to "What U Hear".

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Hard Disk : IDE/SCSI Type
File System : FAT16/32 or NTFS
Open half-length PCI compliant slot
Parallel Port (Printer Port), USB Port



CE FC

HDD Sheriff



PCI



External
(Parallel, USB)



Lan card

HDD Sheriff Client Manager

Mode Change
Power Management
Grouping

Data Sheriff

Auto Backup
Encryption/Decryption
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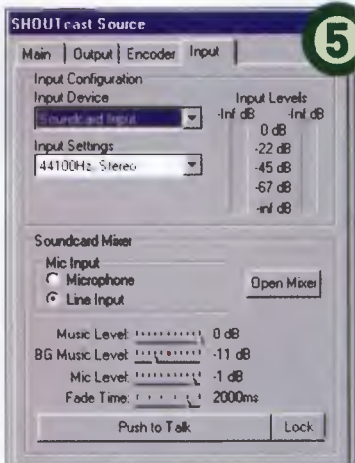


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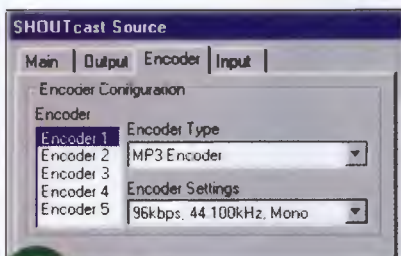


5

The Winamp SHOUTcast DSP plugin source *Input* settings.

CONFIGURING WINAMP

In order to send audio from Winamp to the server, you need to install the Shoutcast DSP plugin for Winamp. Just run the installer and then open up Winamp's preferences (Ctrl-P). Select "Nullsoft SHOUTcast source DSP"



6

The Winamp SHOUTcast DSP plugin source *Encoder* settings.

Selecting Winamp will mean that whatever you play in Winamp will be sent to the server. If you select Soundcard Input, Winamp will act like a proxy, allowing you to use any other audio software (or hardware plugged into the soundcard) as an audio source for the server. If you want to perform live DJing then this is for you.

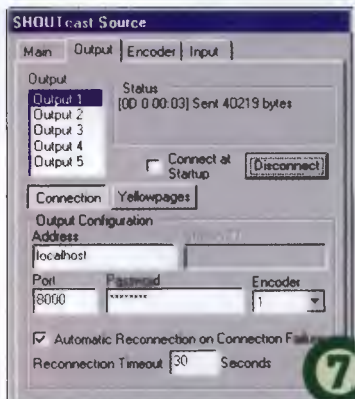
After selecting Soundcard Input, you will be presented with a few more options. Use Line Input and, if necessary, check your soundcard settings using the "Open Mixer" button. Below this, there is a button labelled "Press to Talk". This allows you to switch

from the DSP/Effect options. This will pop up a window with four configuration tabs. It is best to work from right to left when setting these up.

Firstly, the "Input" tab lets you select between Winamp or Soundcard Input as your input device.

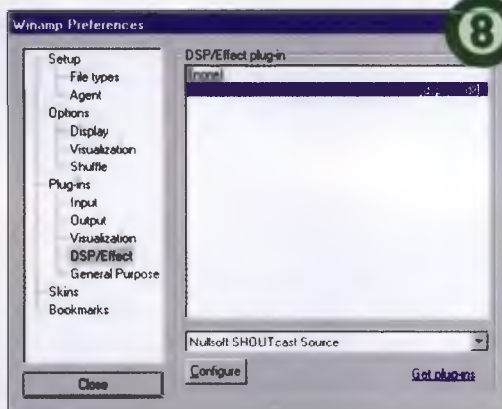
the microphone input on, and it automatically drops the music level in the background so that you can speak over the music without having to do a manual volume fade.

Next, the "Encode" tab is where you establish the number of streams you



7

The Winamp SHOUTcast DSP plugin source *Output* settings.



8

The Winamp SHOUTcast DSP plugin *Level* indicators.

wish to provide and the quality of each. Remember, multiple users can connect to the same stream, so you only need one stream for each compression setting.

The "Output" tab is where you manage the streams. Selecting a stream and clicking "Connect" will tell Winamp to send the audio for that stream to the server. Make sure the server address, port and password are all correct. The "Yellowpages" options are there for you to publicise your broadcast on the SHOUTcast Web site automatically.

The "Main" tab provides visual feedback of your input levels and output streams. There is nothing configurable here, just pretty colours and incrementing numbers to let you know that your streams are being sent to the server successfully.

PLAYING THE MUSIC

If you selected Winamp as your input device in step 3, then all you need to do now is open an MP3 and hit play. ■

9

The desktop of an internet radio broadcaster.



SITES FOR SOUND

Epitonic

epitonic.com

The standout feature at Epitonic is a selection of 15 walk-throughs on the main genres of music they provide. Each guide is presented as a 3-4 minute audio presentation describing the origin and evolution of the chosen type of music and is ideal for newcomers to the digital music scene or for those seeking a new style to try out.

Cyber Radio 2000

cyberradio2000.com

Cyber Radio 2000 provides more than 60 channels of continuously streaming audio files, including several "unique" stations playing commercials or TV tunes 24 hours a day. Cyber Radio have made themselves distinctive by presenting their music through a standalone browser-based player that also incorporates user voting. This allows you to have a direct influence on what's played more often.



Cyber Radio 2000 has its own music player.

MP3.COM.AU

mp3.com.au

Australia's own premier MP3 portal may not be quite as big as mp3.com, but it boasts a large amount of local content. Particularly impressive is the amount of Australian talent that is represented. Every band, well known or otherwise, has the opportunity to have their music published and reviewed by the community, so it's definitely worth making this a regular stop.

MP3 Box

mp3.box.sk

Unlike other, more mainstream portals MP3 Box is a nexus for the whole gamut of MP3-related sites, whether they are conventional or under the radar of normalcy. It has a real no-nonsense approach to presenting the information, and every one of their thousands of entries has a direct link and a one line description of what services are catered for.

MP3 Machine

mp3machine.com

MP3 Machine makes it into our list by providing direct links to MP3s as well as a number of utilities, search engines and other applications that can make life as a digital music junkie a lot more straightforward. MP3 Machine is also one of the only sites available that has a large selection of software for Windows, Mac OS, Linux and BeOS.

Audio Galaxy

audiogalaxy.com

The Audio Galaxy offering is a hybrid of MP3 sharing and searching services which makes it exceptional amongst some strong competition. Audio Galaxy allows bands to submit their own music, so the chances of finding something you haven't heard are much better than other music sharing applications.

Live 365

live365.com

Rather than provide a whole bunch of channels that they have to maintain, the people behind Live 365 decided to let the Web community do the dirty work. By providing a set of clever utilities, anyone can host their own Web radio station. For the listener, there are more than a thousand home broadcasters to choose from — definitely something for everyone.

Launch

launch.yahoo.com

Launch is a very well presented site covering all things music. To lift it above the masses, Yahoo has provided several additional offerings including PressPlay, an on-demand music service and LaunchCast, a radio station that takes you through a brief survey to customise its content to your likes. Launch also has a number of detailed sub-sections catering for the major styles of music.

CNET Music

music.cnet.com

The CNET Music Center doesn't provide MP3s directly, but is more a central repository for all manner of tools, tips and search facilities. The Music Center focuses on how-to guides and reviews of hardware and software that will make your digital audio experience more enjoyable. You can easily utilise 13 of the top search engines through CNET's meta-search reducing your efforts in finding that elusive MP3.

Windows Media Player Guide

While not strictly a standalone site, the Media Guide pages within Windows Media Player are well worth bringing to your attention. The Media Guide can be set to your chosen locality and covers music, radio and video for that region. The content has an impressive diversity that's lacking in the majority of music portals, but you may be turned off by the requirement of the Media Player itself. ■



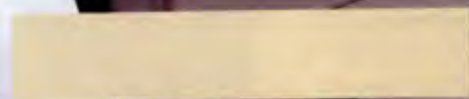
The Media Guide puts most normal sites to shame.

THE PEOPLE'S PRINTS

THE PAPERLESS OFFICE IS STILL A LONG WAY OFF. HUMANS LIKE TO READ THINGS ON PAPER, AND TO MAKE THAT POSSIBLE, THE PAPER HAS TO BE PRINTED. SHARING A PRINTER HAS THE POTENTIAL TO EITHER STREAMLINE YOUR WORK PRACTICES OR BRING OFFICE PRODUCTIVITY TO ITS KNEES.



BY MATT OVERINGTON



Process Cyan

Process Magenta

Process Yellow

FOR A 600DPI FULL-PAGE PICTURE, YOU'LL NEED AT LEAST 4MB OF AVAILABLE PRINTER RAM.

PARSE THE PAPER, PLEASE

Even in a so-called "paperless office", information is generally easier to read and work on if it is printed on a flat sheet of paper. Until we get flexible LCD screens that are less than 3mm thick, we're going to prefer digesting information that's printed on paper.

Having said that, people in an office environment generally aren't going to be printing enough to justify the expense of putting a printer on each desk. A networked printer is the way to go both for reducing total cost of ownership and minimising the amount of hardware that has to be supported and maintained by the IT staff.

A workgroup printer is designed to sit on the network with its own dedicated IP address, so print jobs can be sent to it and automatically queued and spooled by the printer's print server. This enables the printer to be kept in use most of the time and reduces the amount of hardware that a company has to buy to outfit an office.

When the printer does fail, it's only a single piece of equipment to check and repair instead of a whole system, as is the case if you are using a PC-based print server.

CONSIDER THIS . . .

The most vital consideration before purchasing is whether or not the product will satisfy demand and solve the problems that it was bought to resolve. If you are only printing a few pages a week, then you're probably best off buying an inkjet printer and sharing it directly off one of the computers already attached to your network; thus saving several thousand dollars. If you are resigned to buying a workgroup printer and sharing it on your network, there are only a few factors to consider before parting with your hard-earned cash.

Paper volume: this should be a priority when you are shopping for a workgroup printer. Realistically, you'll need a paper tray capacity of at least 400 A4 sheets. If you are in a workgroup of 20 people and each person prints the modest sum of 10 pages per day, you'll still need to completely refill the paper tray two to three times every week, which shouldn't be too much trouble. With a low-capacity printer, you may be refilling the tray several times per day.

Memory: the more memory your printer has, the more complex the images it can process, and the more fonts it can store. For a 600dpi full-page picture, you'll need at least 4MB of available printer RAM. More is obviously better, and a basic model workgroup printer will come with at least 8MB to work with (and most are upgradeable). It's also important to check the page description language (PDL) that a printer uses before purchasing it. Hewlett-Packard developed the printer control language (PCL) which is used for controlling their printers, while Apple has adopted Adobe PostScript as the de facto standard.

Although most printing applications can print in either PDL, PostScript is slightly more advanced in its definitions and is favoured for desktop publishing. In fact, the page you are currently reading was output as PostScript.

TCO: Total Cost of Ownership was a buzz phrase bandied about by IT press to excess about two years ago, referring to the total running cost for a piece of hardware that appeared on the bottom line of a company's financial reports. Although laser printers are vastly cheaper to run than their ink-squirting counterparts, they still require regular replacements of the toner cartridge in addition to keeping rollers and internal components clean and dust-free.

Toner cartridges range in price, but you can generally expect to pay around \$150 for a replacement. Given that the average toner will last for around 30,000 pages, this is not too much of a concern.

COLOUR ME CHEAP

You don't have to cast your mind back too far to remember the days when a mono laser printer was impressive enough, and colour laser printers were so expensive that only the richest of publishing houses could afford to install one for designers and artists. Colour laser technology is becoming much cheaper, and it's finally becoming viable to install one in most offices.

Unfortunately, the biggest drawback of colour laser printers (aside from the initial cost) is that they have a much higher total cost of ownership than conventional mono printers. As Cyan, Magenta, Yellow and Black (C, M, Y and K) cartridges are being worn out instead of just a single black toner when you are printing, the cartridges will need to be replaced frequently. ■



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*A4 black text memo pattern economy mode. See www.epson.com.au for further details.



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Price \$1,799
Verdict ●●●●○



Canon is best known for its inkjet range, and it was also the first printer manufacturer to develop a desktop laser beam printer. If you work in a small office that occasionally requires a flexible, networked printer, the Canon LBP-2000 could be a perfect contender. On one hand, it's capable of handling both A3 and A4 paper sizes.

On the other, it contains only 8MB of SDRAM to help keep the cost down.

At the heart of the Canon is a 200MHz RISC processor and the 8MB of RAM, containing only 45 scalable fonts. You can upgrade the Canon by adding a hard disk and up to 64MB of RAM, but it is the lightweight printer (in terms of price, features and performance)

of those we've looked at.

The maximum optical resolution of the LBP-2000 is 600dpi, but the printer can perform interpolation on the image to achieve a maximum resolution of 600 x 2,400dpi. However this is not a true optical 2,400dpi, and images printed on a 1,200 x 1,200dpi printer, like the HP LaserJet 2200dtn, will be of a higher standard. Pages are output at around 14 A4 sheets per-minute, and the coverage is good, with no lines or smudges.

Although the LBP-2000 comes with media trays capable of holding 350 sheets of paper, the total capacity is 1,100 sheets, which is about average for a network-ready printer for a small office. The Canon is capable of handling the print jobs thrown at it by a small workgroup, however if you are working in an office where printing demands are high, you're best off looking elsewhere for a printer with more RAM and font capacity.

Kyocera FS-1800+

HOLY SHEET!

Contact Kyocera Mita
Phone 1300 364 429
Online www.kyocera.com.au
Price \$2,363.90
Verdict ●●●●○



Kyocera has focused on lowering the total cost of ownership by reducing the amount of components that require replacement when a new cartridge is installed. Each Kyocera printer comes with separate cartridge components (toner, developer, and drum) so each

can be replaced as necessary.

A 200MHz RISC processor drives the FS-1800+, which is capable of printing at a maximum speed of around 16ppm. The default paper trays have provision for holding 600 pages, but you can purchase an additional paper tray to boost the capacity to 2,500 pages.

The FS-1800+ comes

standard with 8MB RAM, which isn't ideally enough for 1,200dpi operation. The Kyocera model would be much better served with 16MB, as is the minimum for the other 1200dpi printers, and adding a further 16MB will set you back \$109.

By default the Kyocera FS-1800+ doesn't come with a network connection (an additional \$549), but it would be the first thing that you add (along with extra RAM) when ordering the unit. Both serial and parallel ports are included on the rear side of the unit.

However, no USB interface is provided for simple Windows or Mac connectivity, which is a negative for an otherwise excellent printer.

Although we'd have liked to see the Kyocera with another 8MB of RAM, it is easily upgraded to 16MB and can be further expanded as your company grows. You can even add a duplexer further down the track so you can print on both sides of the page at 1,200dpi simultaneously. The Canon LBP-2000 is the closest rival to this unit. And even though it's limited to 600dpi output, its expandability and massive RAM and paper capacity are a boon.



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Price \$2,247.30
Verdict ●●●●○



Although the Lexmark printer's curved face reminded us of a giant plastic toaster, the T522 was one of the surprises of the tested group. The Lexmark is a speed demon, and benchmarked the fastest of the workgroup printers that we looked at.

After waiting about nine seconds for the first page to print, the T522 spat out pages at a rate of 23ppm, which is fast enough to keep up with the most frantic printing situations.

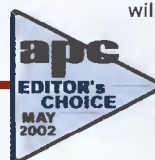
The Lexmark can attribute much of its speed from its large memory capacity. Straight from the box, the T522 is shipped with 32MB of RAM as standard, and it's upgradeable up to a maximum of 288MB. The T522 offers a maximum print resolution of 1200dpi and comes with a number of preinstalled scalable

PostScript, PCL and PPDS (personal printer data stream) fonts.

The standard paper handling includes a 100-sheet multipurpose tray and a 500-sheet paper drawer, but you can add a number of additional media drawers, right up to a massive 2000-sheet holder to install when the IT manager is away (bringing total capacity to a staggering 4100 sheets).

The printer is compatible with a number of operating systems natively, including Apple MacOS, Windows 9x, NT, 2000, XP, Linux, Unix, and virtually any platform that supports TCP/IP (like BeOS).

Parallel, network and USB ports are included on the rear of the T522, although the provision exists to add a second Ethernet port, Token-Ring adaptor, or an IR port if required. Although the printer is astonishingly quick, the output is a little bit smudged at lower print resolutions, so you are best off sticking to the higher print res — which will guzzle through toner cartridges.



HP LaserJet 2200dtn

JET-PROPELLED

Contact Hewlett-Packard Australia
Online www.hp.com.au
Phone 13 23 47
Price \$2,749
Verdict ●●●●○



The LaserJet 2200dtn is roughly midway up the scale of HP's high capacity, network-capable, duplex printers. It comes standard with 16MB of RAM, which is enough for printing full-page graphics at the printer's maximum output resolution of 1,200dpi, although you can install up to a maximum of 72MB to fill with fonts if required.

All the network printers in HP's range feature a Web interface for configuring the printer. To access the menus, all you have to do is open a Web browser on a machine on your office network and enter the IP of the printer.

It's fortunate that accessing the menu system is easy, as the front panel of the 2200dtn is minimalist. Only three LEDs are visible on the front of the printer and to read what they are telling you, you must install

a Control Panel Simulator on your machine, which simulates the LEDs on the printer (and provides a corresponding error message in plain English).

The HP is capable of holding (when fully loaded) 850 sheets of paper, which is plenty to keep even the most wasteful of offices running with minimal refills.

In terms of connectivity, the HP is a winner: cable connections are hidden from view by a removable plastic panel, and parallel, USB and network connections are all available.

The standout feature of the 2200dtn is its fast infrared (FIR) port, which enables mobile office users to print directly from a notebook or handheld without even having to plug into the office network. Even guests in your office who are visiting, for instance to give a presentation, will be able to quickly print out documents if required.

Despite its somewhat plain appearance, the HP is the standout printer of those we looked at; its connectivity and high-quality output helps make it a worthy addition to any office.

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ON THE FLIP SIDE

Contact Epson
Phone (02) 9903 9000
Online www.epson.com.au
Price \$2,090
Verdict ●●●●○



Epson has a long history of producing affordable, high-quality printers for both the home and office, and the 2050+ is one model catered towards a mid-sized workgroup. Although the maximum amount of supported memory is 256MB, the

Epson comes equipped with 16MB straight from the box, which is enough for printing high resolution graphics at 1,200dpi. Nevertheless, we'd have rather seen 32MB, for the installation of a few more fonts. It is straightforward to upgrade the N2050+ and its flip-top lid means that getting inside to work on the internal components is a painless exercise.

The EPL-2050+ comes standard with a duplexer, so you can print on both sides of a sheet of

paper simultaneously. One of the most office-friendly features of the printer is a meter on the front panel that gives a visual representation of paper remaining in the paper tray. The standard paper bins hold 650 sheets of paper, but you can upgrade the 2050+ to hold a maximum of 1,750 sheets.

At a shade over \$2,000, the EPL is an extremely attractive mono network printer, but you can't help but feel it's on a bit of a diet. 16MB is acceptable for 1,200dpi printing, but 32MB would give more room for fonts, and slightly speed up printing performance. Another thing that is missing (but not vital) is a USB connection. Ethernet, serial and parallel interfaces are present, but USB is rapidly becoming the standard for printers, as it enables a plug- and-play connection to either a Mac or PC. As it stands, if you are a Mac owner, you can only use the EPL-2050+ over a network.

Oki C7200n

OKI TO PRINT

Contact Oki
Phone (02) 9690 8200
Online www.oki.com.au
Price \$7,865
Verdict ●●●●○

Oki's C7200n colour laser is a powerhouse for a workgroup demanding a high level of printing performance in colour. As the Oki is designed to print in full colour, its specs are extremely beefy. Coming standard with a 400MHz RISC processor and 64MB of RAM (expandable up to 1GB), the C7200n is essentially a computer and printer combined.

The processor takes care of handling all four colour print drums (C, M, Y and K), which are placed in line, so all colours are applied to the paper on the single print pass. This architecture benefits in two ways — the printer is fairly quick at printing colour pages (around 8ppm), and as each drum

contains a separate colour, you can reduce running costs by only replacing the colours that you use regularly.



The main paper tray that is included with the Oki is capable of holding a modest 530 A4 sheets, while you have the ability to increase the overall capacity to 1590 sheets by adding two additional trays. Like the HP, the Oki includes its own print server so you can manage settings via a browser interface (which allow it to be configured under any OS). It also includes its own management software.

Although you can buy a duplexer for the C7200n to enable you to print on both sides of a sheet of paper simultaneously, the more powerful C7200dn is also available, and includes the duplex add-on and an additional 64MB of RAM. USB, Parallel and Ethernet connections are available, and the printer can talk in most network protocols, including TCP/IP, IPX and Ethernalk. Print quality is outstanding, and the Oki is quite speedy for a colour laser printer thanks to its single-pass design, which makes it ideal for a demanding workgroup. At \$7,865, it'll dent the IT budget slightly, but the Oki C7200n is made to handle whatever you throw at it . . . and it will.

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SMART CAREERS

PROFILE

LINDA BOETTCHER



Linda Boettcher left school at 16, and had a lot of lost time to make up when she began a university marketing degree at the age of 25. Fifteen years later, she's telecomms marketing manager for Teradata, Asia Pacific.

After doing her undergraduate degree at the University of Texas in Arlington, she then did post-graduate studies in marketing research at the same institution.

"I believe a good education is necessary if you're to be seen as serious in a chosen area of work," she stresses, "but experience and commonsense are critical if you're going to succeed."

**WHEN YOU ARE
ACCOUNTABLE YOU
OWN THE OUTCOME
AND GIVE YOUR BEST**

NAVIGATING THE

BY PHILIPPA YELLAND

You can't escape psychometric tests because they are being used at all levels: entry-level recruitment, internal comparisons, and to identify if middle-management is capable of promotion. However, younger people don't like the assessments, feeling they tell employers far more than they need to know. In a survey of 8,000 workers, almost half felt such an examination was too revealing and impinged on personal privacy, says TMP Worldwide director Barry Vienet.

"A massive 61.5% of those in the 19- to 24-year-age bracket resent being psych-tested, viewing the tests as too intrusive," he says.

The promoters of psych tests — mainly human resource directors — are more likely to favour these measures, with seven out of ten describing them as "extremely valuable". Not surprisingly, CEOs also view the tool positively with nearly the same fraction believing psych appraisals are essential and non-intrusive.

Nevertheless, one of the most vocal critics of these judgements is Macquarie University School of Management psychologist, Professor Robert Spillane. For people over the age of 25, he says, the best indicator of future job performance is a person's past job achievements. The appraisals may have a very limited value for people under the age of 25, Spillane claims.

A better way is suggested by management guru Peter Drucker — if you want 50 good people under the age of 25, hire 100 at random and six months later sell the worst 50 to your competitors.

The former head of programming at the ABC, Hugh McGowan, resigned indignantly in 2000 after failing the maths component of tests introduced by former managing director, Jonathan Shier. McGowan was also asked: "Do you lie?" The matter is now with the NSW Industrial Relations Commission.

At Murdoch University in Perth, executive staff—including vice-chancellor Steven Schwartz — had to sit intensive psychometric tests late last year. Staff were understandably nervous, and two refused to participate at first, but capitulated eventually. The human resources director Chris Jeffrey denies they are psychometric tests, preferring to call them skills audits.

Management style was tested with questions such as "Do you enjoy convincing people about your ideas?" (identifying persuasiveness). Another test included a 360-degree survey (this is where managers and co-workers rate the person being tested). Test results were said to be confidential and subjects received a report and feedback.

While completing her Masters, Boettcher worked as marketing manager for a medical equipment maintenance company. She enjoyed the role as it exposed her to how technology can improve and make an impact on people's lives.

"It's fascinating to know that behind those CAT and MRI scans, and other radiology imaging equipment are powerful computers enabling doctors to make better diagnoses through improved understanding of a patient's physical state," she says.

Boettcher's interest in technology applications provided the pull in her next career moves. When she returned to Australia she joined Cable & Wireless Optus as a senior product manager.

"It was an exciting time as Optus was just starting in Australia. I was involved in customer acquisition campaigns and the introduction of new services. We were trailblazing as the mobile telecommunications industry was just opening up."

For Boettcher, working with a large corporate like Optus allowed her to specialise in an

PSYCHOLOGICAL TESTING FOR JOBS AND PROMOTIONS IS BECOMING ONE OF LIFE'S CERTAINTIES. THESE "PSYCHOMETRIC" TESTS FOCUS ON AREAS WHICH PSYCHOLOGISTS BELIEVE THEY CAN TEST.

MINDFIELD

For entry-level jobs, employers are resorting to online psychometric testing to cope with the deluge of online applications. Increasingly, job sites are signing deals with online testers, the most recent being seek.com.au's agreement with Brisbane-based OneTest.

Employers using seek.com.au will be able to use OneTest's online tests which include: Cognitive Ability Tests (CAT), Work Preference Profiles and Behavioural Profiles. Within 15 minutes of an applicant finishing the battery of tests, an "interpretive, psychologist-authored report" is available to the employer, says OneTest founding director Steven Dahl.

Controversy rages about the validity of psychometric testing. If you're young, inexperienced and without an employment track record, then the experts seem to think that general mental ability (GMA) testing, which measures general cognitive ability, is the most reliable.

The main reason that more intelligent people have higher job performance is that they acquire job knowledge more rapidly and acquire more of it, says Frank Schmidt of the University of Iowa and John Hunter of Michigan State University. However, over the age of 25, things change. Behavioural consistency kicks in. "The best predictor of future performance is past performance," say Schmidt and Hunter.

But, the predictive abilities of CAT are questionable, says Macquarie University's Spillane. "The results depend entirely on what's being tested — it's unethical to test people and give the results to a third party; and evidence shows psychometric tests don't predict management performance."

Principal consultant at Kay Gaydon & Associates, Kay Gaydon, agrees that track record counts for something, but argues that "because someone has turned one particular company (around), it doesn't mean they can turn around another company with that style." Such evaluations should be used with other procedures, she suggests. "If organisations are using psychological assessment for senior executive assessment, they should be making sure the psychologist is using tests that have been designed for that level of ability."

Another fault of the assessments is that they rely on assumptions, Spillane points out. For example, tests for sales staff assume extroverts will be better than introverts, he says. "Some of the best world leaders, who weren't aggressive, would be excluded."

Yet if you have to fake the answers to get the job, do you really want to work with this company? ■

PSYCH TEST TIPS

- Don't agonise over each response — the psychologist who's assessing the test looks at trends, not each answer.
- Don't get stuck on one question and neglect the others.
- Don't let your feelings about a previous test influence your approach to the current one.
- Ensure you have a full night's sleep before the test.
- Schedule the test for your most-alert time — usually the morning.
- Read the instructions carefully.
- Don't guess, unless the instructions say so.
- Ask for feedback and when your results will be available.
- Be polite to the test administrator — that's often part of the selection process as well.
- Ensure you understand the practice questions — ask for help if you're unsure.
- Manage your time according to the number of questions and the time available.
- Don't lie — it's not in your interests, nor that of the company.

area of interest — product development. She was involved when Optus Mobile launched a campaign called Beyond Belief, the first above-the-line subsidised digital mobile phone offer. It marked the shift in technology from analogue to digital, that was welcomed by mobile phone users.

After Optus, Boettcher jumped at the opportunity to work with Vodafone, the other GSM mobile carrier in Australia at the time. "Vodafone presented different challenges altogether — it was right on

the cusp of breaking new markets and establishing a strong customer base."

In her role with Teradata, 40-year-old Boettcher is responsible for the growth of telecomms' business in the Asia Pacific region.

Apart from the cultural aspects of a regional role, the continual changes and consolidation in the telco industry should continue to provide further challenges for Boettcher.

Her frustrations? People who are not

accountable or responsible for their work. Boettcher thrives with people displaying a can-do attitude, who take responsibility and ownership of a project or any given task.

"I believe that if people are accountable for their jobs and actions, they will own the outcome and give their best."

Despite the attractions and perks of being a chief executive officer or a managing director, she would prefer to maintain the balance in her family and professional life.

And she does.



AUSSIE ASSAULT



MULTINATIONAL STUDIOS LIKE INFOGRAMES
MELBOURNE HOUSE AND INDEPENDENT
DEVELOPERS SUCH AS RATBAG ARE PRIMED TO
GIVE AUSTRALIA AN EVEN MORE SIGNIFICANT
ROLE IN THE EVOLUTION OF GLOBAL
INTERACTIVE ENTERTAINMENT.

The media calls it "Aussiewood" — the troupe of Australian actors, directors, editors and cinematographers now ranked alongside the cream of the crop of Hollywood's movie-making glitterati. Added to this, major Hollywood movie studios have opened in Sydney and the Gold Coast and blockbusters like *The Matrix* series and *Star Wars Episode II: Attack of the Clones*, are now made on our shores.

That success story isn't restricted to the big screen. Aussies are also playing a significant role in the global gaming scene, creating the next wave of high-octane titles for PS2 and Xbox.

Australian game developers have been active players in the industry for the past 20 years, but only recently have they come to the fore, spurred by a combination of fresh creative talent and comparatively low production costs.

Local game makers now export products worth an estimated \$30 million per year and employ some 500 full-time staff — a number predicted to climb to 2,000 within five years as Aussie developers continue to win lucrative contracts over high-profile US and European houses.

Both Infogrames and Electronic Arts have established development studios down under, with Infogrames pledging a \$50 million investment in their local arm.

BY STUART CLARKE



► Ratbag Games' *World of Outlaws Sprint Cars* (also featured on opening pages).

FROM ZERO TO LOCAL HERO

A decade ago, talented Australian programmers with a passion for a career in games had two choices — head overseas, or seek work with Melbourne's Beam Software. Beam scored several international successes in the 1980s (which may as well be the Middle Ages when it comes to computer games), with its seminal one-on-one fighting game *Way of the Exploding Fist* and adventure games based on *The Hobbit* and *The Lord of the Rings*.

In 1986, in the dark days after the death of Atari and before the rise of Nintendo, Beam's titles accounted for 20% of all games sold worldwide.

During the 1990s Beam produced a string of hits in all game genres (mostly contract work for overseas publishers) on the PC and console platforms, including *Shadowrun*, *KKND 1* and *2*, *Mechwarrior* and *Dethkarz*.

Acquired in 1999 by giant French publisher Infogrames and renamed Infogrames Melbourne House (IMH), the company is now the premier development studio in Infogrames' global network. IMH has already completed the Le Mans 24 Hours racing game and movie tie-in title *Men in Black 2* (both for the PS2). Numerous secret projects are currently underway for PS2, Xbox and the PC.

Markus Windelen, vice-president of production for IMH, worked for a decade in the European game industry before heading to Australia in January 2002, and is genuinely impressed at the talent he's seen here. "This is a really, really cool environment. The team at IMH are very young but not inexperienced, which is generally true across the games industry, and this means they're open to new ideas and full of energy."

Windelen points out that Infogrames' recent \$50 million investment in Australian game-making "allows us the budget to realise a lot of concepts". While the money will employ locals, Australia's close proximity to the lucrative Asian markets also means that "the decision makes strategic sense."

While IMH is certainly getting a slice of the \$50 million Infogrames cash pie, some projects have also been awarded to independent developers. Windelen says that prospective game makers are encouraged to present original ideas for funding.

Infogrames and several other French games companies have been aided in recent years by funding from the French Government, however Australian Federal Government assistance has been conspicuously absent in the Australian games industry.

Windelen is in no doubt that government funding would provide a substantial boost the local industry, especially smaller independent developers.

"There should be no difference between the treatment of the movie and game industries. After all, games are part of the broader entertainment industry and revenue from games overtook Hollywood box office last year, so that's pretty big time. There's a lot that governments have to gain here.

"One hundred percent of revenue for Australian games comes from the export market, so there's certainly room for government to help". One of Windelen's suggestions is that Government funding be used to help smaller developers attend the annual E3 trade show in Los Angeles, where deals of serious size and scope are done.

He's also keen on a "jumpstart" program to help smaller Australian developers produce quality titles, similar to the financial arrangements for Australian films.

"State governments, especially Victoria's, have been the most responsive, and Melbourne is currently the centre of Australian game development," he notes.

Brisbane and the Gold Coast seemed to be the new growth area, but the recent closure of Electronic Arts' Southport studio was a blow. While Windelen counts EA as a major competitor, he sees a lesson in the loss. "It seemed EA came into Australia from the outside and sort of stayed on the outside, whereas when Infogrames invested in Australia they chose to buy an established Australian game maker which has been around for 20 years."

While IMH is clearly the dominant player on the local scene, it certainly hasn't got all the action to itself. Adelaide's Ratbag Games has enjoyed several hits in recent years, especially in the US, for racing titles such as *Dirt Track Racing*. The number of employees doubled in 2001 to over 70 people and Ratbag is currently working on a number of projects for different publishers. Ratbag co-founder Greg Siegele says that the local scene has evolved greatly during his nine years in the business.

Back then, he recalls, "only three or four games development

FOR THE FIRST TIME, REVENUE FROM THE SALES OF COMPUTER AND VIDEO GAMES HAS ECLIPSED THE HOLLYWOOD BOX. THE GAMES BUSINESS RAKED IN A STAGGERING \$40 BILLION WORLDWIDE LAST YEAR.

studios existed in Australia. Today, the Australian games industry is recognised as a powerful entity by our international peers, with half a dozen large studios employing 50-100 people each."

IN NEED OF A POWER-UP

It wasn't until 1999 that the industry got together to form a lobby and support group, the Games Developer Association of Australia (GDAA). Siegele, who is also the GDAA's vice-president, says that the Association represents the interests of games development companies to ensure the industry "goes from strength to strength, whether it be to source international talent, to improving relations and approvals with governmental departments or legal advice."

Siegele agrees with Windelen that while the local industry is tasting success through its own hard work, Federal Government assistance could take things to a whole new level. "Twenty years from now games will be the dominant entertainment medium, and it is vital that Australia has a strong development industry to communicate and protect our culture and values. The considerations are no different to the film and TV industry."

As yet, there is no distinctly identifiable "Australian style" of game, in the way that some Japanese and French made games are instantly recognisable. Yet this may emerge as the local industry grows in size and confidence.

Siegele believes that Ratbag's first game, Powerslide, featured landscape, humour and values which were "distinctly and purposefully Australian."

"IKON, our next blockbuster title will feature aspects which are reminiscent of the Outback. We don't have a philosophy to create 'Australian-esque' titles, but this is an area which our audience has previously enjoyed."

With Infogrames Melbourne House and Ratbag forging ahead, Australia looks ready to win an even more prominent role in the worldwide interactive entertainment space. ■

► *Infogrames Melbourne House vice-president of production, Marcus Windelen*



WANNA BREAK INTO THE GAME INDUSTRY?

There is no set path into the games industry, although, as you'd expect, some roles require specific skills and knowledge. Generally, game programmers require a tertiary qualification in computer science and/or equivalent industry experience, while a double

degree in a related field, such as software engineering, physics or maths is even better. Artists require experience in modelling and texturing with software such as Softimage, Maya or 3D Studio Max.

However, Ratbag co-founder and CEO Greg Siegle took a very different route into game making. He was a certified accountant and worked as a barrister and solicitor before quitting in late 1993 to start up the game development company with a childhood friend.

Ratbag almost went broke before winning some big contracts on the strength of its first PC racing game, Powerslide.

The contracts are now flowing in and Ratbag employs 75 people but it is always on the lookout for new talent. Siegle identifies three main ways for a school leaver to enter the games industry, depending on their ambitions.

"To become a programmer, we look for tertiary qualifications in computer science, systems engineering or mathematical science, whilst an artist should ideally have qualifications in graphic design, industrial design or illustration.

"To become a games design or programming specialist, you might prefer to gain a qualification with Canberra's Academy of

► Ratbag Games CEO Greg Siegle



THE AUSSIE PLAYERS

While IMH (www.infogrames.com.au) may be the biggest and oldest developer, and Ratbag (www.ratbaggames.com) has seen success before, they are not the only companies making games in Australia in 2002.

While there are now around 40 local companies trying their luck at making interactive entertainment, the other major players are Tantalus, Torus, Blue Tongue, Evolution, SSG and MicroForte.

Based in Melbourne, Torus (www.torus.com.au) started out in 1994 with the game Stargate for the Game Boy and has largely concentrated on titles for Nintendo's popular handheld. Now with over 50 employees, Torus recently completed three big games for the Game Boy Advance — Jackie Chan Adventures, Planet of the Apes and Duke Nukem. Torus is currently working on four projects which are still under wraps for PS2 and Xbox (two for Infogrames and two for Activision).

Also founded in 1994 and based in Melbourne, Tantalus (www.tantalus.com.au) has mainly concentrated on converting popular games to alternate systems (such as Sega's House of the Dead to the PC) but recently also had major success with South Park Rally. Coming releases include Looney Tunes Space Race on PS2 (for Infogrames) and a Woody Woodpecker game for the Game Boy Advance.

Blue Tongue (www.bluetongue.com), another Melbourne-based developer, had international success with Riding Star, a horse riding and management game aimed at younger female

game players, as well as the Starship Troopers PC game. Blue Tongue is currently working on a secret project for all next generation systems.

Sydney's SSG (www.ssg.com.au) boasts talented game makers who have been doing their thing for 20 years. Its "thing" is niche PC strategy games, but the 50 titles they have produced (including the Reach for the Stars and Warlords series) have earned them a highly respected reputation.

MicroForte (www.microforte.com.au), which formed in 1985, has development studios in Sydney and Canberra, and released the PC strategy game Enemy Infestation a couple of years ago. The company works very closely with Canberra's Academy of Interactive Entertainment and employs some of their graduates.

Based in the heart of Brisbane, Evolution Games (www.evolutiongames.com) formed in 1999 but has established some excellent foundations in both team and technology. It has two major games in development — Spotswood and Eric and Europa, both for the PC and next generation consoles.

Another Queensland developer, Auran (www.auran.com), had a massive worldwide hit with the PC strategy game Dark Reign a few years ago. While the company is still making some games, Auran is now concentrating on producing game-making software which they can license to other game developers and publishers around the world.

Not only are Aussies now making great games for a worldwide market, they're also taking a leading role in showing the rest of the world how to do it.

Interactive Entertainment, Sydney's Enmore TAFE or QANTM in Brisbane."

It is possible to sneak into the industry with no qualifications at all though. "Sometimes, die-hard gamers can rise through the ranks of a games development company by starting out as a games tester," says Siegele. "No formal qualifications are required — testers need good communication skills, an eye for detail and good organisational abilities."

Yes, game testing means playing games all day for money, but Paul Murray, producer for Ratbag's forthcoming *World of Outlaws Sprint Cars*, says that despite the impression, "it's a pretty boring job, not glamorous at all as it's tremendously repetitive. You'll be playing the same game over and over again for nine months trying to break it."

However, after a while in the role you will certainly understand all the issues involved in making games and may have picked up some programming skills along the way.

The qualifications Siegele referred to are based at the most respected tertiary courses in Australia, focussing specifically on game making.

QANTM, a private multimedia training centre, has partnered with the Brisbane Institute of TAFE for a Diploma of Information Technology (Software Development). The course includes 3D programming, networking programming, C/C++, game design, script writing and graphic design for both console and computer-based games development. Those who are more interested in animation — for games and for other industries — should try QANTM's Diploma of Screen (specialising in animation).

The Academy of Interactive Entertainment (AIE) is in the process of taking over the Canberra Institute of Technology's Watson campus and specialises in 3D computer graphics, games

programming and design. With close links to the Game Developers Association of Australia, AIE's program is designed not only to educate but also to find students jobs in the games industry as quickly as possible.

AIE courses feature subjects such as high and low polygon modelling and animation, lip synchronisation, lighting and atmospherics, camera work, texturing and digital composition. Students will learn either 3D Studio Max or Alias|Wavefront Maya with a variety of full- and part-time courses available.

Sydney's Enmore TAFE offers a Diploma of Interactive Technology (software development) that offers experience in both object-oriented and traditional systems development methods. It does require a TAFE certificate in basic IT before you can even apply, but that means that everyone who wants to do the course is of a relatively high standard and committed to the subject.

For more information: www.qantm.com.au
www.aie.act.edu.au
www.tafensw.edu.au



► The team at Adelaide's Ratbag Games





STAR WARS JEDI KNIGHT II: JEDI OUTCAST

FEEL THE POWER OF THE FORCE IN THIS LONG-AWAITED STAR WARS SEQUEL. *By Jason Hill*

A long time ago in a galaxy far, far away, LucasArts couldn't put a foot wrong. Their every release would earn rave reviews and be snapped up by an adoring public. But recently gamers have become cynical following a string of duds and cash-ins.

Fortunately, Jedi Outcast is a welcome return to form. Developed by Raven, creators of Hexen and Solider of Fortune, it is an outstanding shoot 'em up. The Quake III: Team Arena engine has been used to create the most dazzling Star Wars game yet. The environments are stunning and incredibly detailed, and along with excellent character animation, thrust the player directly into the Star Wars universe.

Once again you play Kyle Katarn, former mercenary and Jedi Knight.

Those furry funsters the Ewoks (with the help of some pesky rebels) have overcome the Empire, but there are still remnants left in the galaxy. Kyle has let his Force powers languish for fear of falling to the Dark side, but he soon must reclaim his past in order to save his future.

There are 24 complex and detailed levels full of deadly droids, bizarre creatures, bounty hunters and stormtroopers, plus cinematic sequences to keep the plot moving. Players can choose full-on combat strategies or a more stealth-like approach, and there are basic puzzles to solve. You'll explore locations like the gorgeous Cloud City and Nar Shaddaa, the smuggler's moon.

And just the chance to play with the lightsaber is worth the price of admission.

Other weapons include the Stun Baton, E11 Blaster Rifle, Flechette, Thermal Detonators, Heavy Repeater and Chewie's weapon of choice — the Wookie Bowcaster. All have alternate fire options. You'll need the arsenal because opponents are much smarter than in Jedi Knight — they are constantly trying to outwit you.

The addition of Force Powers helps elevate the game beyond most other shooters. With strong powers you

Jedi Outcast is not only a must for fans of the films, it's also one of the best shooters ever made.

Online www.lucasarts.com/products/outcast/

Price \$99.95



COMMAND AND CONQUER: RENEGADE

Renegade could have been a standard shooter simply plunked in the C&C universe, but its multi-player mode sets it apart. Two teams play a battle at ground level just like a real-time strategy game, with the aim to capture the enemy base. Harvesters gather resources, and you can purchase different character classes and vehicles to drive.

Online www.westwood.com/games/ccuniverse/renegade/

Price \$89.95



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Online <http://simgolf.ea.com/>

Price \$69.95



SERIOUS SAM: THE SECOND ENCOUNTER

It isn't a true sequel, but Second Encounter sure is a blast. Action is intense and frantic, visuals are top-notch, and there are enough new weapons, enemies and environments to keep fans more than satisfied. The sniper rifle and flamethrower are particularly welcome additions, and once again multiplayer is a riot.

Online <http://serioussam/godgames.com/>

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WRECKLESS

IT'S ALL THE THRILLS AND SPILLS OF A HONG KONG ACTION FLICK. *By Jason Hill*

Xbox

Seconds after you pick up the joystick to play Wreckless, you'll be careering through a glass window, skidding around a shopping centre and crashing into a bus. The cliché "action-packed" doesn't begin to do the game justice.

Surprisingly, there's a plot. In fact, there are two stories in one. The A scenario follows the exploits of two scantily-clad female police officers known as The Flying Dragons as they take on the Yakuza through the streets of Hong Kong.

Meanwhile the B scenario missions are even more comical, following the bumbling efforts of wannabe underworld figures Ho and Chang. The stories intersect as you progress.

Initially each pair has only two (slightly odd) cars to choose from, but a total of 14 can be unlocked.

Level objectives include ramming

cars off the road, racing opponents through the city streets, collecting items, pulling off stunts, photographing Yakuza members and exciting rescues. Often the missions will involve multiple tasks, and usually you are racing against the clock. One of our favourite missions sees the Yakuza strap a hapless professor to a huge dump truck filled with explosives. The player must launch their car off any jump they can find to try to detonate the explosive barrels and free the captive.

The game's selling point is the resplendent cities, which are absolutely packed with life and activity. There's heavy pedestrian and vehicle traffic, and all manner of objects to demolish, such as phone boxes, street signs, barriers,

portaloos, bus stops and dim sim stands. Most items you crash into will result in debris littering the road. Your car will also quickly lose its bonnet, doors and other panels as you attempt to find a time-saving shortcut and almost inevitably collide with a nearby cement mixer or concrete wall. And if you smash into a double-decker bus the occupants will comically spill out on to the road. A dramatic replay mode lets you enjoy your most spectacular pile-ups.

Unfortunately, like most arcade-style games, longevity is suspect. The car handling is basic and there are only 10 missions per campaign. You won't breeze through them in an afternoon, but more play modes would have been appreciated.

Online www.gowreckless.com

Price \$99.95



STAR WARS: OBI-WAN

PC owners cried foul when Obi-Wan was proclaimed an Xbox exclusive, but in the move to console the game obviously turned to the Dark side. Wielding a lightsaber has never been so dull. There are cool Jedi abilities, but poor controls, camera, level design and visuals spoil the fun.

Online www.lucasarts.com

Price \$99.95



GENMA ONIMUSHA

A director's cut of the PS2 samurai slash 'em up. There's little visual improvement, but collecting souls has been made more difficult, extending the game's lifespan. Souls are released when you kill a demon, but enemies can now absorb them and power-up before you do. A must for Onimusha virgins.

Online www.capcom.com

Price \$99.95

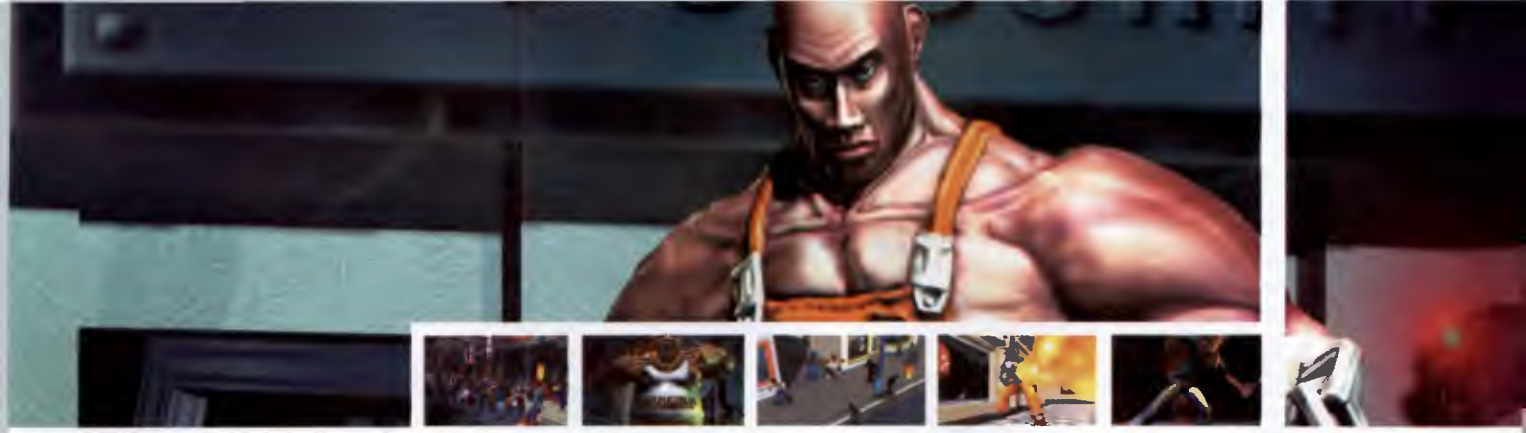


DARK SUMMIT

It was a promising idea to give a snowboarding game mission-based objectives and a storyline, but the clumsy controls and slow speed rob the game of much of the fun it could have offered. The big, shortcut-filled mountains are the highlight, but Amped and SSX are far superior games.

Online www.darksummit.net

Price \$99.95



STATE OF EMERGENCY

BYO BASEBALL BAT AND HAVE A SMASHING GOOD TIME. *By Jason Hill*

PS2

Welcome to the world's first riot simulation. After the controversial Grand Theft Auto 3, Rockstar is certainly doing its best to stir things up with parents and politicians alike. In State of Emergency you can even slice an opponent's head off and belt someone else with it.

Of course the game has its tongue firmly in cheek, and the cartoon visuals temper the realism. But like GTA3, much of State of Emergency's pleasure is in the anti-social endeavours.

The title is a classic beat 'em up in the grand tradition of Double Dragon, Final Fight and Streets of Rage, but on a massive scale. The gee-whiz factor is the number of characters on screen at once. There can be hundreds battling it out on the city streets at the same time, and watching the digital deviants react in a different manner

when you unleash some firepower in their direction is amazing.

Players assume the role of an angry civilian who joins a freedom movement to fight against an oppressive corporation that has taken over government. You'll have a riot as you smash windows, blow up cars and unleash a wide variety of weapons in the direction of the corporation's henchmen and city gangs. Thankfully the goal is not to kill innocent civilians. Players can punch, kick, grab, throw and unleash combo moves to inflict even more damage. You can also pick up items like park benches, garbage cans and crates to hurl at rivals. But the weapons are really where it's at, with a wide variety of chaos-causing gear in your arsenal including a pistol,

flame-thrower, hatchet, uzi, grenade launcher, shotgun, grenades and rocket launcher.

The two main modes of play are Chaos and the mission-based Revolution. Chaos plays like an arcade game, with the player restricted to a limited amount of time to earn points. The clock is extended by killing enemies, and once you reach a certain score the next level is unlocked. Bonus tasks announced by the narrator while you play offer big points and serious carnage.

Revolution is surprisingly the weaker of the two modes, despite offering around 180 missions and several playable characters. It will probably prove too repetitive for many to slog through. ■

Online www.rockstargames.com/stateofemergency

Price \$99.95



DYNASTY WARRIORS 3

This plays like a beat 'em up, but you're taking on hundreds of opponents at once on the battlefield. It's bigger and better than its fun predecessor, offering new attacks, two player modes, more strategic commands and elephants to ride!

Online www.koeigames.com/DW3/DW3.htm

Price \$99.95



HERDY GERDY

One of the few unique titles to grace the PS2, Herdy Gerdy sees players progress through its gorgeous and large cartoon world by herding animals into pens. Each species behaves differently, and there are bigger animals that prove troublesome to your efforts. Charming cut-scenes and plenty of items and abilities further impress.

Online www.eidosinteractive.com

Price \$99.95



DEUS EX

This most celebrated of PC titles has been brought across to PS2, and the gameplay has been tweaked thus ensuring the controls are spot on. Best described as a blend of role playing game with first person shooter, Deus Ex gives the player intoxicating freedom.

Online www.eidosinteractive.co.uk

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Get your game on

GAME-LOVERS REJOICE: WINDOWS XP HAS FEATURES GALORE TO SATISFY YOUR NEEDS, EVEN IF THE GAMES ARE IN DOS.

When the first PC arrived in my house around 1980, there wasn't a single game available for it. By the end of the first month we had five, including the original Wizardry, and by the end of the year we had 34. This was a first-generation 4.77MHz 8088-based PC, mind you, with feeble graphics and no hard drive.

Today, of course, the PC platform has become quite the hot rod of electronic gaming. Gamers swap speed tweaking tips, advice on which video cards work best with which motherboards, and dream up ever-more-outrageous overclocking methods (how does liquid nitrogen sound?). And of course, there are the games themselves, light-years beyond anything our 8088 brethren could have imagined.

However, the PC isn't the only place to play games anymore — dedicated consoles like the PlayStation 2 and the Xbox are close rivals for anything the PC can do. But console or no console, the PC is still a game platform to be reckoned with.

Part of that is due, I suspect, to its open-endedness. If your current video card isn't elite enough to deal with Mighty Mechwarrior Monsters III, you can always swap it out for the newest

model (provided, of course, you have the cash to invest in such a venture). PS2s, Xboxes and GameCubes are less adaptable.

Games for the PC were either written to run in DOS or were self-booting. When Windows 95 was introduced, Microsoft also introduced DirectX, a multimedia support layer designed to allow the kind of fast access to hardware that games demanded. Many games were still being coded in DOS at the time, but with DirectX game designers slowly started moving to Windows as a viable platform for gaming. Today Windows is pretty much the PC platform for gaming, but there are still a lot of DOS-based games floating around which people still play avidly. You'd be amazed how many of these older games are still sought after and traded between players.

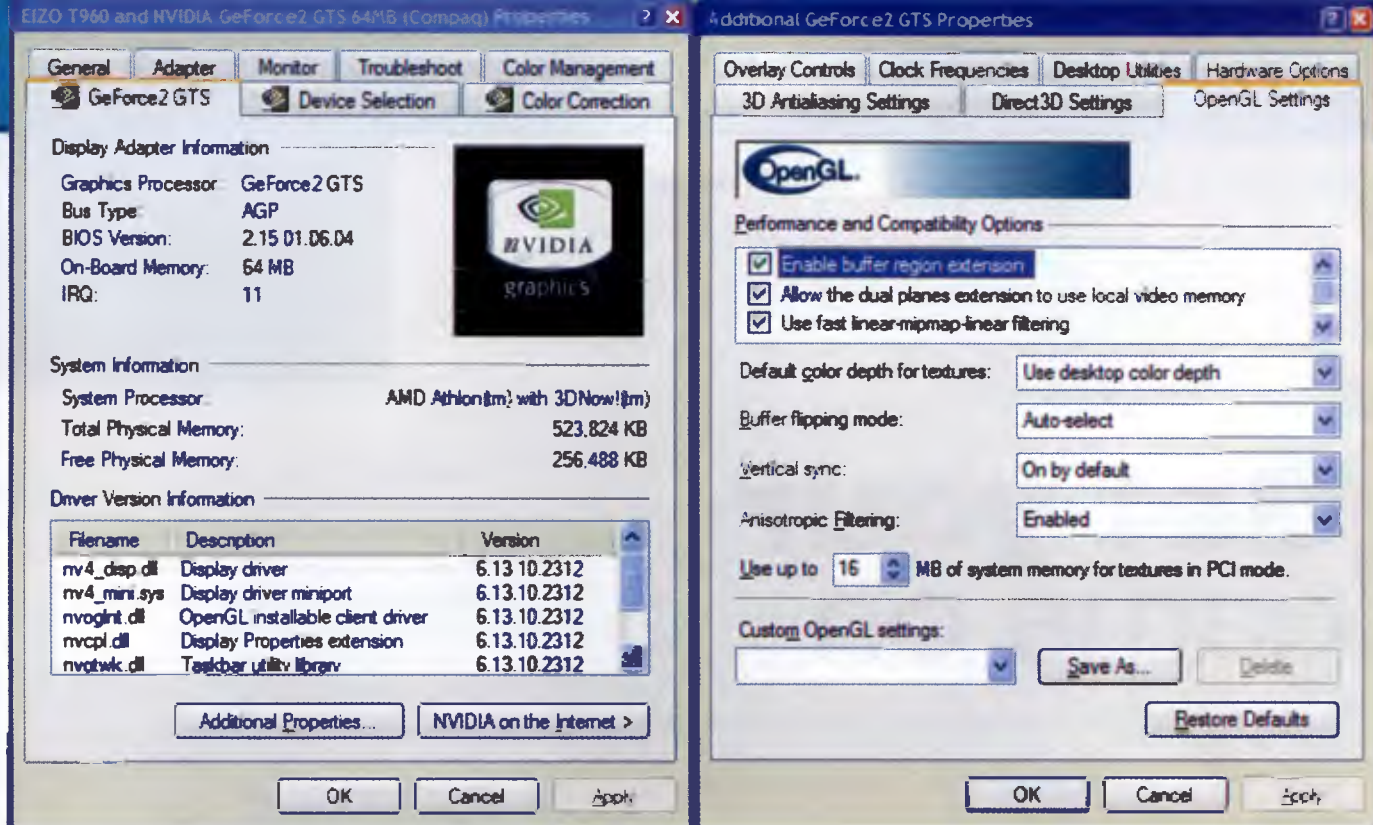
Windows XP was produced with gamers at least partly in mind, especially gamers who still run those vintage Windows 9x and even DOS-based games. A fair number of them were hardcore users who'd switched to Windows NT or 2000 for system stability, but were unhappy with the way those OSes didn't provide the same level of direct-to-hardware speed

and gameplay that Win9x did. To that end, Microsoft's engineers sat down and came up with all sorts of ways that XP could better serve gamers — from new features in DirectX 8 to ways the OS could support DOS-based play.

The first and most important of the new features for supporting gamers is the Program Compatibility extensions that are built into Windows XP. When Microsoft threw one of its first pre-release bashes for XP, they detailed the reason many older Windows-based games failed in XP — and it was not because they were inherently incompatible.

Most of them were written to the same core set of Win32 APIs that haven't changed in years. The big reasons for failure were because the program was being provided misleading information about the host system. For instance, most Windows 95 programs ask the system for an OS revision number before starting an install. Many of these programs don't understand that "Windows NT 5.1" is in fact a valid response, and throw an error. So one of the ways that the XP engineers were able to get a great many games running was simply by intelligently misreporting the OS revision to the host program.

Another common reason for failure was mismatched APIs (or function calls). Some of the APIs in Windows 95 do exist in higher revisions of Windows, but not in exactly the same fashion — they may exist under a new name, or with a different implementation. Backwards-compatibility was never provided simply because a great many of these programs were never marketed



► The newest NVIDIA driver set certified through WHQL is loaded with new features that the "out of the box" driver didn't have — like OpenGL adjustments.

for the audience that ran 2000 or NT. (This is what it means when a program crashes saying it couldn't find the "entry point" for this or that procedure in this or that DLL.). To fix this, the XP engineers drafted an ongoing and revisable set of API remappings that allowed the older games to run seamlessly.

The program makes a call for a Win95-style API, and the OS "remaps" the call to the qualifying XP API. What the games see as being available in the host OS is exactly what they expect to see, and the game can then run without problems.

Setting program compatibility isn't something that happens automatically in XP. It needs to be handled on an app-by-app basis. If you have a particular application you want to set program compatibility for, simply right-click on the program icon, select Properties, and click on the Compatibility tab.

The "Compatibility mode" section of the sheet is the main aspect you should take care to consider. To have XP run that program in a given compatibility mode, check the "Run this program in compatibility mode"

box and then select and operating system from the list below. Most of the time running as Windows 95 does the trick, although there are a few programs that demand Windows 98 (due to the presence of components only provided in Win98). Windows NT and 2000 compatibility modes are also provided, although I confess I've never used them.

The other options listed on the Compatibility tab are for games that run in full-screen mode. Many DOS-based games are like this, but there are a number of Windows games that also take control of the whole screen. To provide for this, there are check boxes for running apps in 640 x 480 resolution or 256-colour mode — some older programs malfunction if they don't see exactly the resolution or colour depth they need. The "Disable visual themes" option is another XP-specific selection — check this off if XP's visual styles are interfering with the program's proper operation. This way you don't have to turn off visual themes systemwide to get the program to work.

There are some DOS-based programs that will probably never

run in XP because of some basic technical differences. For instance: programs that are not aware of anything except 8.3 filenames will have big problems. Programs that cannot recognise volume sizes beyond a 12-bit or 16-bit DOS limit (4GB, basically) will probably never work on a system where you have 10 or 20GB partitions. Many of these programs are actually not games, but instead are things like custom-written DOS applications for business.

Clipper, one of the most prevalent DOS database programs for business apps, has a long and established history of use, and many of its users are reluctant to switch away from it because, well, it works. (If you're interested in learning more, I recommend reading the newgroup comp.lang.clipper.)

With any discussion of games on the PC comes a discussion of emulators. Emulation is the art and science of simulating the behaviour of one type of machine on another — for instance, running a classic 16-bit Nintendo console on the PC. Or the Atari 2600, Apple II or even the Sony

PlayStation. Many of the games made for these consoles are still popular with gamers — in fact, I know of several gamers personally who find those games more interesting than anything being released today!

There are about as many emulators as there are platforms — in fact, there may be multiple emulators for any given platform. The bad news is that not all of these emulators may work in XP. While one emulator may not work, another may work just fine, and there tends to be more than one emulator out there for any given variety of hardware. At least one Nintendo emulator, NESTicle, doesn't work reliably in Windows XP, but there are others that work seamlessly. One of the most popular of all emulators, MAME (Multi-Arcade Machine Emulator), designed to run arcade games, runs flawlessly in XP — in fact, it runs a little better in XP than it did in Win98 or 2000, thanks to DirectX 8.

A word about emulators. These programs exist in a fairly grey legal area, since they require third-party copyrighted material to run. If you don't actually own or have a licence to the programs run on the emulator, you may be breaking the law.

The two biggest and most critical elements for gaming in XP are solid video and audio drivers. Gamers are constantly pushing for better, faster and stabler drivers, although one of those criteria often comes at the expense of one or more of the others. The newest drivers may be the fastest, but they may not be the most stable. The stablest drivers are more reliable, but they may not be the most bleeding edge. So goes the tradeoff.

Microsoft handles this quandary by drawing a line in the sand, of

sorts. This line is called WHQL certification, where the alphabet soup stands for Windows Hardware Quality Labs. Said lab is a MS testing facility wherein hardware drivers are tested to the breaking point to insure that they'll be dependable for Windows users. The bar for qualifications has been significantly upped for Windows XP, to ensure that the best possible drivers get released to the public through MS. This also means that it may take that much longer for a WHQL-certified version of a driver to be available.

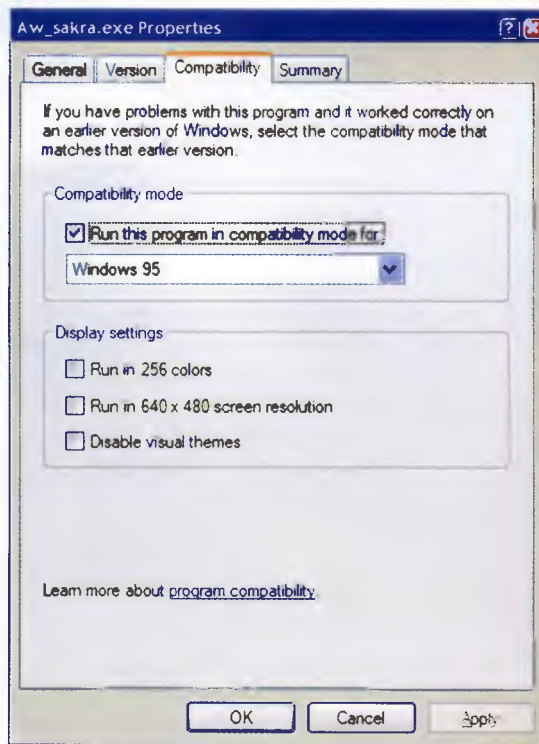
Note that any company can post drivers for XP hardware on their Web site and have people download and install it; they don't have to be WHQL-certified to be available. But WHQL-certified drivers have an additional level of credibility, and are generally also made available through Microsoft Update — so users with the hardware can get updates automatically installed through that service. Gamers love to get bleeding-edge video and audio drivers — they're usually the fastest, have the niftiest features and a broader palette of options.

As an example, consider the XP drivers I recently downloaded for my NVIDIA GeForce2 GTS video card. The default drivers that were supplied "out of the box" for the card were unremarkable; you couldn't make any changes to advanced settings such as how OpenGL or DirectX's Direct 3D were handled.

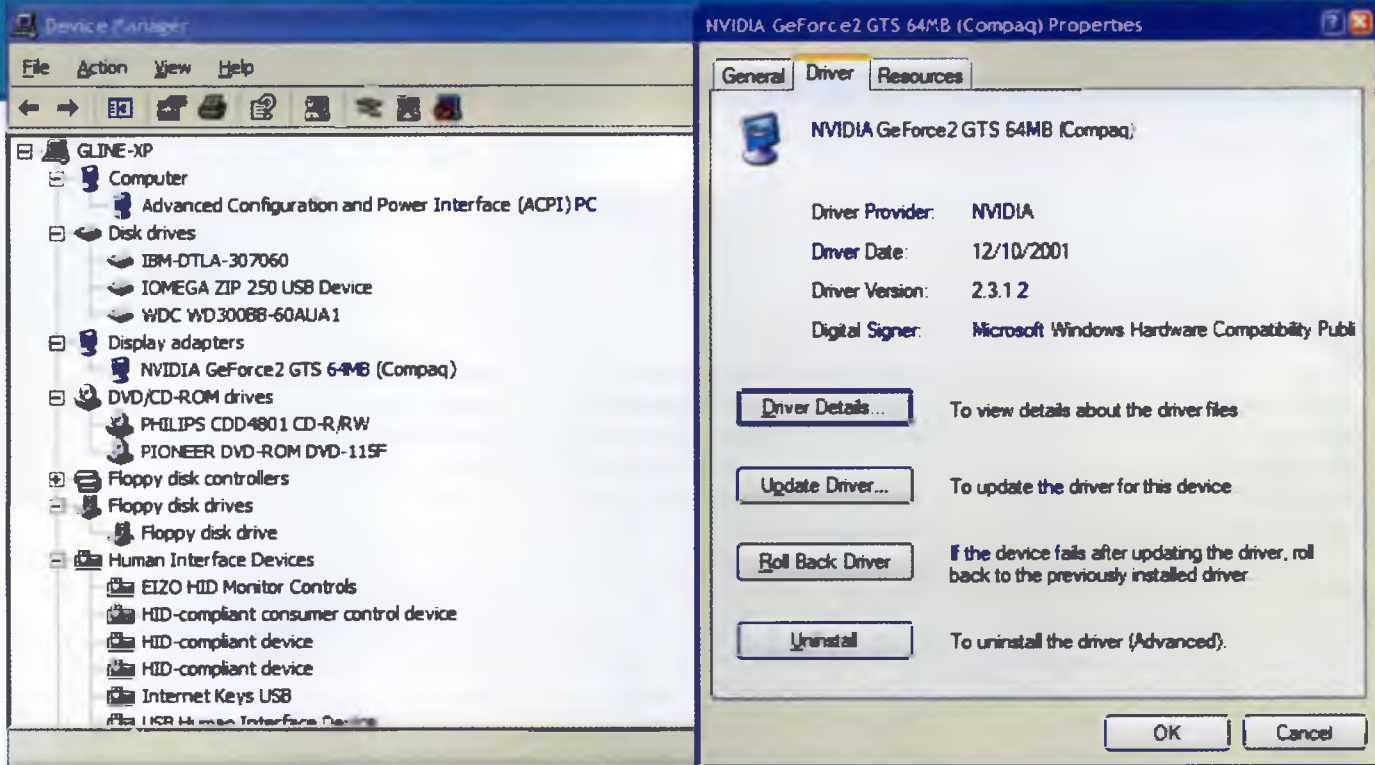
To that end, I downloaded the newest XP drivers direct from NVIDIA's site, even though they weren't yet MS-certified. When I installed them, though, the end result was a mess of trouble that required me to boot into Safe Mode and roll back the driver manually. A month or so later, NVIDIA

published a WHQL-certified update of the same driver, which I installed through Microsoft Update — it worked perfectly. Apparently MS's fussiness pays off. The new driver contained all the tweaking options I could hope for, including overclocking settings. While I'm no die-hard speed demon, it was nice to see such properties exposed in the event I ever wanted to play with them.

Rolling back drivers is something that deserves a little discussion in detail, since almost every gamer who dabbles in bleeding-edge drivers will probably need to do it at some point. The driver-rollback technology is new to XP; it allows you to replace the current version of a driver with the previous version, in the event the



► The Compatibility Tab in a program's Properties sheet lets you set how Windows XP represents itself to that program, so older apps can run seamlessly.



► Rolling back a faulty or unstable driver requires little more than clicking a button, but if you can't get your system to be stable enough to get there, you may need to boot in Safe Mode.

current version proves faulty. If you install a new driver and find your system still operates except for the hardware in question (sound cards are a good example of this), you can roll back the driver by following these steps:

1. Right-click on My Computer and open the Properties page.
2. Under the Hardware tab, click Device Manager.
3. Expand the device tree until you see the device you want to roll back the driver for. If it's malfunctioning, there will either be a question mark icon over the device, or a red X if it's not working at all.
4. Right-click on the device and select Properties. Click on the Driver tab.
5. Click Roll Back Driver.

You'll usually have to reboot after rolling back a driver, just to be safe, although some devices can be rolled back without a reboot.

If a driver has damaged your system badly, you may want to boot in Safe Mode and do the above procedure. To do this, press F8 as your system boots, and choose Safe

Mode from the menu listed. Then just follow these steps once your system finishes booting.

Something that bubbled to the surface as a tangent during a discussion of games in XP is worth mentioning here. XP is a lot more finicky about memory than just about any previous version of Windows. Cheap memory that seemed to work fine in Windows 98 may cause XP to choke. Some people who have migrated from one OS to the other and brought their games with them have mistakenly assumed that the games were causing XP to bomb.

The reason XP traps (i.e., crashes with a BSOD) faulty memory rather than grinding on is to prevent data corruption — better to stop working completely than to write possibly bad data to the disk, or so goes the thinking.

One friend's PC (stuffed with games) suffered unpredictable failures of this kind until we swapped the RAM with something a little better. Problem solved: he hasn't had a crash since. This is something to consider — it may not be the software at all.

A number of people have asked me about dual-booting between Windows XP and another version of Windows as a way of preserving compatibility with games. Setting up a dual-boot scenario is often difficult and painful, but it may be one way for a gamer to verify that certain programs do in fact work under both operating systems.

The best way to do this is to place each operating system and its applications on two separate partitions. If you have Win95/98 or Me already installed, you can boot the XP CD and selectively install the OS to another partition — provided you have one free.

If you already have XP installed and want to install Win98, that's much trickier . . . and probably deserves an article unto itself. (Yes, that's a prediction for the future.)

Finally, if you want XP gaming help from other XP users, you can join an MSN community established for XP gamers at www.community.win-xp.cc/. However, you will need a Microsoft Passport account to access the site. ■

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Headline-maker

PLUGGING XML-BASED RSS FILES INTO WEB SITES TAKES THE
HASSLE OUT OF KEEPING THEM PUMPED WITH FRESH CONTENT

When Tim Berners-Lee first invented the Web he envisioned a grand, far-flung network of documents all linked together like a huge public database. The trouble was that his original model didn't take into account one important factor: publicity. As the number of Web sites boomed, people started to want updates on what was new and interesting.

Among the many inventions created to solve the "what's new" problem were; the "What's New" page, the "What's Hot" page, and of course the unforgettable "What's Cool" page. All were valiant yet flawed attempts, as they required a particular amount of manual upkeep. In order to publicise what was new, you had to physically look around, make notes, and then type up a fresh list of links every day.

So the boffins got together to come up with something more suitable, in the form of XML-based newsfeeds. The beauty of this approach is that each site publisher can post their own standardised list of "what's new" links, which interested parties can then program their computers to suck up automatically from off the network. And since it's all just raw XML (rather than pre-formatted HTML), the data can be prettied up for display on your own individual Web site and made to look appropriate.

WHO MADE IT, AND WHAT'S IT CALLED?

The format itself is named RSS (initially for "Resource Definition Format" Site Summary and later changed to just "Rich" Site Summary), and was created by engineers at Netscape Communications prior to the company's sale to AOL. It was originally devised to allow individual site owners to publish their own "news channels" on the My Netscape portal site. Netscape no longer offers the service, but RSS was rapidly picked up elsewhere and is now a widely used standard.

HOW TO MAKE IT

To demonstrate this kind of XML application, I created a Flash movie that can display headlines from an RSS summary file. With the framework in place, it's just a matter of plugging in the URL of the RSS file and the rest is done automatically. Every time the movie is played, it will pull down the latest headlines and display them.

You can find the source files for this month's workshop on disc 1 of the cover CD-ROM.

ABOUT RSS

Here's a quick description of the RSS format so you can understand what it is you're dealing with.

RSS is a special-purpose subset of XML, designed specifically for describing site summaries. It's a bit

like HTML, except instead of tags like <FORM> or <TABLE>, RSS has tags like <CHANNEL>, <COPYRIGHT> and <ITEM>. You can explore the full list by checking out a copy of the RSS Document Type Definition (or DTD) at www.scripting.com/dtd/rss-0_91.dtd.

The most widely used version of RSS is 0.91. It has since been updated to version 1.0, but I've stuck with 0.91 since the majority of channels are posted in that form.

FINDING A CHANNEL

The easiest way to find channels is by searching a channel directory. Here are some of the better ones:

My Userland
<http://my.userland.com>
xmlTree
www.xmltree.com
Infominder
www.infominder.com/webminder/rss_directory

Each of the directories contains lists of publicly available channels, along with the URLs of RSS files that you can access. To quickly test an RSS file, just follow the links and view it in your Web browser.

For my Flash movie, I've used the ActionScript.com channel, located at www.actionscript.com/asc_news.xml. It contains titles and links for the latest eight news headlines on the ActionScript Web site.

```
<?xml version="1.0" ?>
<!DOCTYPE rss (View Source for full doctype...)>
- <rss version="0.91">
- <channel>
  <title>ActionScript.com</title>
  <link>http://www.actionscript.com/</link>
  <description>News for Macromedia Flash users. Fresh daily.</description>
  <language>en</language>
  <copyright>Copyright 2001</copyright>
  <managingEditor>david@emberton.com</managingEditor>
  <webMaster>david@emberton.com</webMaster>
- <item>
  <title>Macromedia responds to SWF virus</title>
  <link>http://www.actionscript.com/archives/00000227.html</link>
</item>
```

► Sample code from the ActionScript.com RSS channel.

ACTIONSCRIPT'S XML OBJECT

ActionScript has its own built-in XML object, used to load data from a URL, process it and if necessary return it to the server. Flash reads in plain text XML data and converts it into a "live" object that can be manipulated with code.

If you take a look at the example file, you'll notice three key lines on the first frame of the ActionScript layer:

```
RSSData = new XML();
RSSData.onLoad = GetData;
RSSData.load("fetch.php?url=
www.actionscript.
com/asc_news.xml");
```

In the first line, an empty XML object is created named RSSData. RSSData gains all the abilities of the generic XML object, but is a unique container ready to be filled with data.

The onLoad method allows you to specify any function you want executed when the XML stream has finished loading. This is crucial, because downloads take time. Instead of having to loop the timeline waiting for the data to arrive, ActionScript does the waiting for you. In this case

GetData() is a function I wrote to extract all the <ITEM> elements from the RSS file and display them. Notice that the usual parentheses are left off here, because GetData() is only being referred to for later use and not for immediate execution.

Finally, the XML object's load() method initiates a file transfer from the specified URL. And what a weird URL it is.

OVERCOMING "FLASH SECURITY"

I use the term "Flash security" mockingly because this feature really irks me. You see, Macromedia designed the Flash Player to only load XML files located on the same server domain as the SWF file being played. In other words, if your movie is at xyz.com.au and you want to load an RSS channel hosted on abc.com.au, nothing will happen.

To call this a security measure is a bit of a misnomer. In reality it's more of a theft-prevention device, to stop you leeching XML data from other people's servers. But, since RSS channels are made for leeching, there's not much choice except to break the rules.

My workaround consists of a tiny PHP script that goes out and reads the remote file you want and echoes back its exact contents. Because the fetch.php file itself is on the same domain as the SWF movie, Flash doesn't think you're violating any restriction. All you need to do is specify the desired URL by appending it like so; `fetch.php?url=www.abc.com.au/thefile.xml`.

The "http://" prefix is intentionally

Macromedia releases Flash Player 6

New LiveMotion 2 tutorials posted

Evaluating ColdFusion

XML object enhancements

Getting the most out of old versions

Poll: ExtremeProgramming, worth it?

David's Mailbag

► Here is what the example file looks like when played.

omitted, which is why the URL starts with "www" instead. The way Flash checks to see if you're doing something wrong is by scanning the URL text for the phrase "http://" and then comparing the first address it finds with the SWF's own location. Flash isn't smart enough to pick up on just a server name, so the PHP file adds the http prefix behind the scenes.

The PHP script itself looks like this:

```
<?php
$url = "http://" . $url;
readfile("$url");
?>
```

To access any XML file you want, just change the server location specified at the end of the `RSSData.load("fetch.php?url=");` line.

Of course, if you don't have PHP installed on your server, similar fetch files can be written with just a few lines of VBScript or Perl.

SIMPLE TEXT FIELD INTERFACE

As I mentioned, the GetData() function filters through the the XML file looking for any <ITEM> elements it contains. The items are the actual content part of the channel, and each one has its own title, link and sometimes a description. Using for() loops and if() statements, GetData() cycles through the entire channel, picks out all the item titles, links and descriptions for onscreen display.

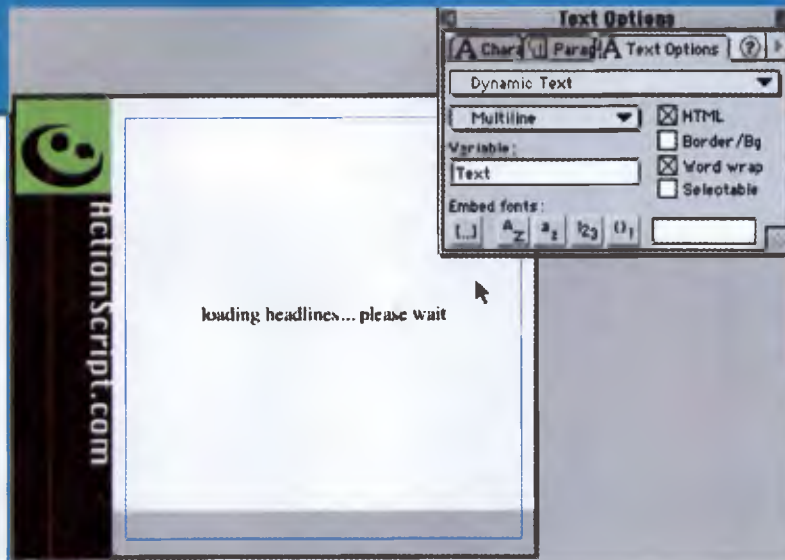
Now, you could present this data in many different ways using Movie Clips and Buttons. But for link lists like this, I prefer to use a simple HTML

What is an HTML field?

An HTML field in Flash is just a regular text field that is set to look out for tags like <P> and and render what it finds. Flash is limited to displaying HTML 1.0 however, so only the most basic of tags is supported – no tables or images.

HTML fields are created using the Text Tool and the Text Options panel. Any text field can be set to render simple HTML by changing its type to Dynamic, and checking the HTML button.

► A text field can be made to render HTML with the Text Options panel.



text field. Using a text field to display clickable HTML links is perfect for times when rollover animations and other visual effects aren't really necessary.

In my example I've set the title links to appear in black 12pt, with the descriptions (if any) to appear slightly smaller and on separate lines:

```
if (Title) {
    Text += "<p><font size='12'>"
    Text += "<a href='" + Link + "'> " +
    Title + "</a></font>";
    if (Description) {
        Text += "<br><font size='8'>"
        + Description + "</font>";
    }
    Text += "</p>";
}
```

You can customise the appearance of headlines by altering the font attributes.

A newer version of the Player was eventually released, but not until a lot of people already had the old one installed. Luckily, ActionScript guru Branden Hall created a special workaround named XML Nitro that compensates for the bug. XML Nitro is included with this workshop's example file. The code itself is a text field that you include and activate like so:

```
#include "XMLNitro.as"
XML.prototype.ignoreWhite = true;
```

CALL FUNCTIONS IN HTML FIELDS

Although text fields are limited

to displaying HTML 1.0 (which is essentially just paragraphs, bold and italics), Macromedia's engineers threw in the ability to make links that call JavaScript and ActionScript functions. The calling of JavaScript is browser dependent and not particularly reliable, but the ActionScript functions work every time.

Here's an example using a text field with the variable name Text:

```
Text = "<a
href='asfunction:HelloWorld'>Click
me.</a>";
```

```
function HelloWorld() {
    trace("Hello World!");
}
```

Upon testing, "Click me." will show up as a link. When clicked, the Output window will pop up and display "Hello World!"

USE FULL URLS FOR LOCAL TESTING

Although Flash enforces its security restrictions on movies played in a browser, SWFs that you play in Test Movie mode or using the standalone player are not affected. So you can go ahead and use full http:// address when testing locally, in order to see if there are any bugs in your script. Swap the fetch file URL back in when it's time to upload to the server.

MAKE A SIMPLE SCROLLER

Most RSS files are short, containing only a few headlines. But some are longer and require more space than I've allocated in my example file. Rather than make a really tall movie, add a pair of scroll buttons to move the text in your field up and down.

There are plenty of scrolling examples available on the Web, but the trick is to set the scroll property of the text field. For instance, Text.scroll ++; will scroll down one line, and Text.scroll --; will scroll up one line.

PUBLISH YOUR OWN

Now that you've experienced RSS channels, you'll probably be interested in how you can publish and publicise your very own site summaries. Run a search for "RSS" on your favourite search engine or Web directory and you'll get a long list of tutorials and other resources.

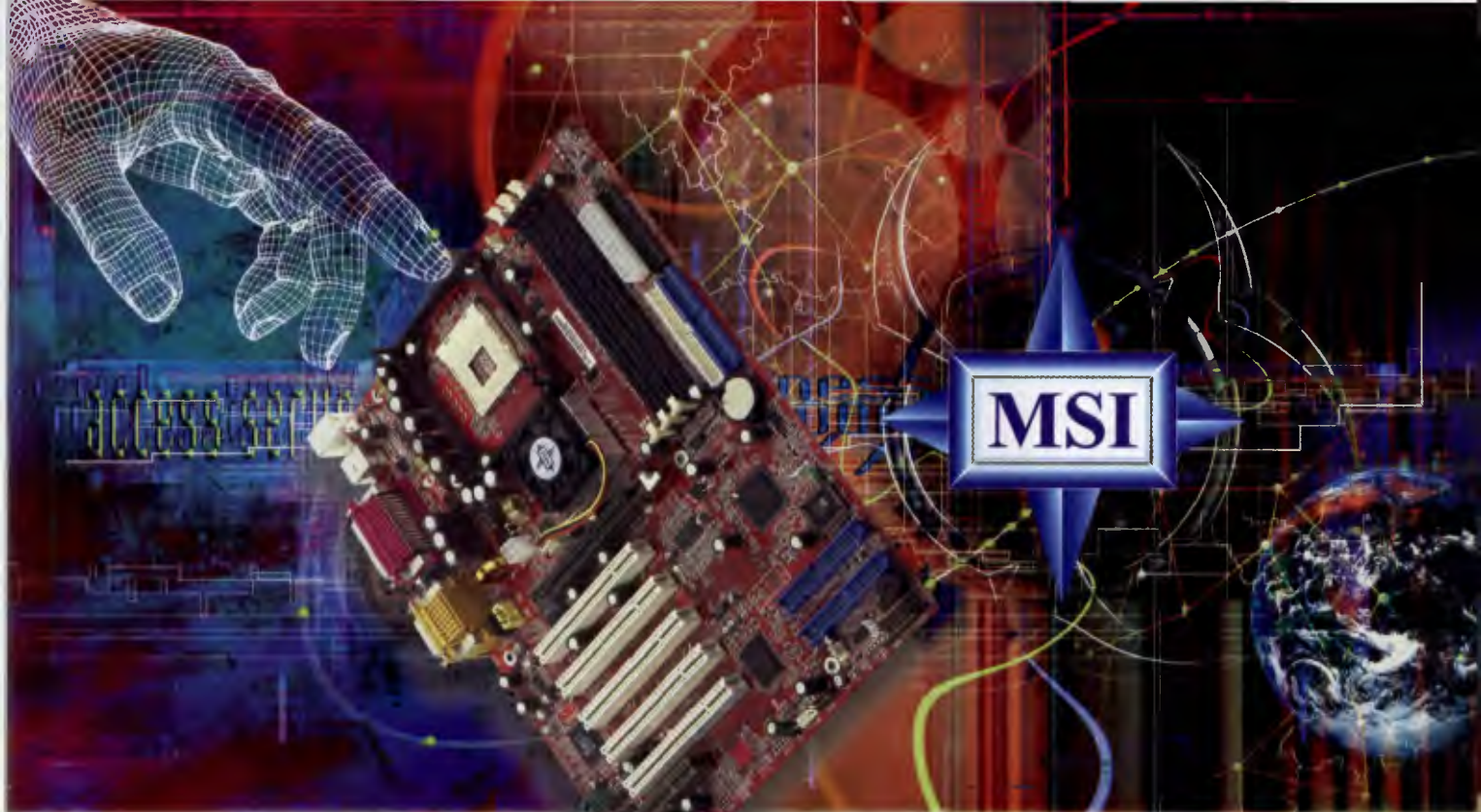
Channel directories like xmlTree and Userland make it easy to add your own custom channel, so that other people can broadcast what's new on your Web site. ■

TIPS

Use XML Nitro

XML files, like HTML, are meant to be whitespace ambivalent. That means that you should be able to put line breaks and spaces in between tags and still have everything work okay. Unfortunately, the original Flash Player 5 was shipped with a bug that prevented it from correctly handling XML file with whitespace in them.

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A matter of preference

GET THINGS DONE QUICKER AND SMARTER BY TAILORING PHOTOSHOP'S INTERFACE TO REFLECT THE WAY YOU WORK.

For Mac users, when following the instructions in this article, please substitute these keys:

Option for Alt
Command for Control
Control-click for Right-click

Not all of Photoshop's preferences are configured through the standard Preferences dialog box [Ctrl-K] (Edit, Preferences, General). In fact, there are many very useful options and features "hidden" throughout Photoshop's extensive user interface.

While I am sure that I could write an entire book on the hidden features and functionality of Photoshop, for the purposes of this article, I will concentrate on revealing to you those options that pertain specifically to Photoshop's interface.

As you're reading through this article, I strongly encourage you to use the tips I'm showing you to configure Photoshop in a manner that best suits your personal work habits. Invest the time now so that you can find what you are looking for at a glance — so that things are always where you expect them to be. This can really save you a lot of time (and, in some cases, frustration) in the long run.

PHOTOSHOP FAVORITES

To begin with, let me show you

very useful feature that many people overlook. Press Ctrl-O or choose File, Open from the menus. Navigate to a folder that you use on a regular basis (for example: "C:\My Documents\My Pictures\").

Now press the Favorites button located in the top right corner of the Open dialog box; then choose Add Favorite. The current path has been added to the Favorite button's menu. To access this folder from now on, simply select it, by name, from the Favorites button's menu.

Use the Favorites button to store all of your frequently used folders: this can be a real time saver — especially if you save in multiple, or deeply nested folders. Unfortunately, the Favorites button is not available in the Save dialog box.

And here's a little tip for you. You can also double-click on Photoshop's (grey) background to summon the Open dialog box.

WORKING WITH A BLANK CANVAS

Now let's configure a few characteristics of the document window. Create a new document by pressing Ctrl-N (File, New). Enter 300 (pixels) for both the Width and Height; then press OK. If you prefer the document rulers to be visible at all times, press Ctrl-R (View, Show Rulers).

Photoshop will remember the state of the rulers and will open/create all future documents with your preferred option. Next, right-click on the document rulers, assuming they are visible, and select your preferred unit of measurement. For monitor and Web-related work you'll likely want to use Pixels.

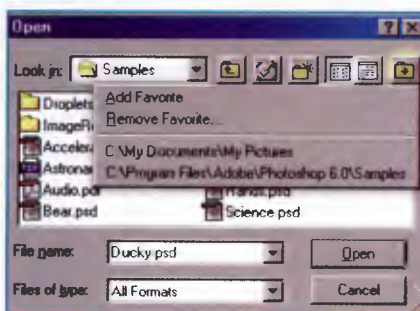
You can even change the colour of the canvas borders — the grey region that surrounds the canvas. To do so, enlarge the canvas either by maximising the document window or by dragging out one of the corners. Define a foreground colour using the Color Picker (or Color palette); then Shift-click on the canvas border using the Paint Bucket tool [G]. To restore the default colour, change the foreground colour to 25% grey (R192,G192,B192 or #C0C0C0) and then Shift-click on the canvas border again.

STOP MOVING THOSE PALLETES!

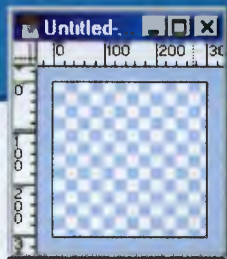
While Photoshop's palettes are both necessary and well implemented, they do take up a great deal of screen real estate. Thankfully, there are several options that you can employ to "reduce the clutter".

To begin with, you can store (dock) palettes that that you do not use on a regular basis (i.e. the Character and Paragraph palettes) in the palette well — on the right of the Options palette.

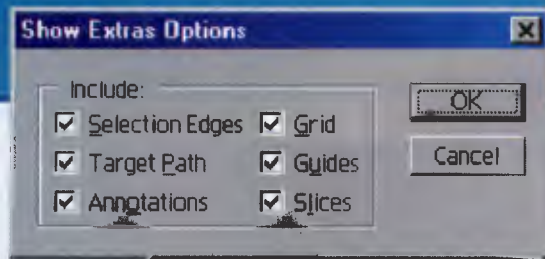
The palette well is also a great place for keeping large (maximised) palettes that contain a lot of information (i.e., the Actions



▶ Photoshop's Open dialog box has a Favorites button to store your frequently visited folders.



► Use the foreground colour for the canvas borders by Shift-clicking with the Paint Bucket tool.



► The Show Extras Options dialog lets you configure which canvas elements get

palette) since they will remain concealed until you require them.

Grouping palettes together is another good way of tidying up the interface. To group palettes together, drag the desired palette (via its named palette tab) and drop it on top of another palette – an outline will appear to indicate the drop location. You may also “stack” palettes by dragging one palette tab onto the top or bottom of another palette – again, an outline will appear to indicate where the palette will be placed.

Using a combination of stacking and grouping, you can combine all your frequently used palettes into a single super-palette (or uber-palette, as I call it). This allows you to move, scale and minimise all palettes simultaneously. To minimise individual palettes, double-click on their associated palette tab. You can even minimise the Toolbar by double-clicking on its titlebar!

To conserve space in palettes containing thumbnails (e.g. Layers, Paths and Channels), right-click on an empty area of the palette, then choose a thumbnail size from the resulting context menu. Alternatively, you may set the thumbnail size via the Palette Options command in each palette's respective palette menu.

Also note that you can hide/reveal all palettes, including the Toolbar, by pressing the Tab key. Press Shift-Tab to hide/reveal only the palettes, leaving the toolbar visible. To show only the Options palette, press Tab (to hide all palettes), then press Enter.

WHAT'S OUR CURRENT STATUS?

Next, let's customise the information displayed in Photoshop's status bar (which, by default shows Document

Sizes). Ensure that the status bar is visible (Window, Show Status Bar), then click on the solid, right-facing arrow and choose an option from the pop-up menu. I usually have this set to display the Document Profile: so that I can quickly see the profiles of all open documents.

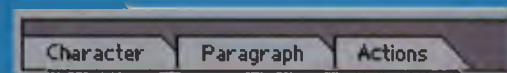
NOW YOU SEE 'EM . . .

One last thing we'll look at (for this article anyway) is the View, Show, Show Extras Options. This dialog box allows you to configure which objects will be hidden/revealed via the View, Show Extras command [Ctrl-H]. Items that are checked (on) may be toggled on/off with the Show Extras command, while those that are unchecked (off) will be ignored. This is handy in circumstances where (for example) you want to toggle a selection on/off, but have guides remain visible.

BETTER SAFE THAN SORRY

Once you have tailored everything to your liking, it is a good idea to make a backup of your settings. First, make sure that Photoshop is shut down – since its settings are only saved when you quit the application. Then, simply copy the contents of the following folder (assuming a default install on a PC) to another folder of your designation: C:\Program Files\Adobe\Photoshop 6.0\Adobe Photoshop 6 Settings\.

Now, if something terrible happens and your preferences were lost, you could copy your backed-up files over the ones in the “Adobe Photoshop 6 Settings” folder to restore all of your settings. ■



► The Palette Well is a great place to store palettes that you use on a regular basis – or for large/maximised palettes.



► Drag a palette onto the top or bottom of another palette to “stack” them.



► Use a combination of grouping and stacking to create a super-palette.

TREVOR MORRIS is a 2D/3D graphic artist and Web developer who specialises in Photoshop and Illustrator. He can be contacted at tmorris@fundy.net.

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Rock da house

STREAMING AUDIO, BLARING MP3s, DOWNLOADING MODS; THERE'S NOTHING A LINUX BOX CAN'T DO IN HOME AUDIO ENTERTAINMENT. AND IT'S FREE!

In previous workshops we've covered the benefits of using Linux for a variety of tasks, both around the home and the office. The fact that Linux machines are inexpensive and stable, the software is free, and Linux is easily integrated with other operating systems, helps make the free OS an obvious choice for a range of audio applications.

With a large number of open source audio software appearing for Linux, it is now easier than ever to incorporate a Linux box into your home stereo to use as an MP3 Jukebox, CD player or as a gateway to online radio stations and multimedia streaming.

Once you have a Linux distribution up and running on your machine, with a soundcard and appropriate drivers installed, a Linux box can provide all the multimedia capabilities of a Windows machine, albeit at a substantially lower cost.

MP3 AUDIO UNDER LINUX

The first audio format that you'll want to be able to both encode and play will be MP3. The music format has done a lot for revolutionising the way that we listen to music, and high profile cases such as Napster's have ensured that MP3s are now part of the mainstream culture.

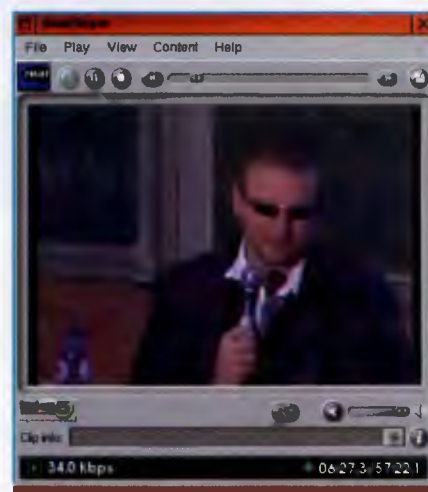
Most of us can now boast extensive MP3 collections on our PCs, and because of the flexibility and lack of rights management built into the format specifications, MP3s are guaranteed to remain popular in the immediate future.

Although the MP3 format is proprietary (owned by the Motion Picture Experts Group), a GPL encoder exists for Linux entitled LAME (which recursively stands for LAME Ain't an MPEG Encoder). The LAME engine is used by a number of applications that work with MP3 files for both Linux and Windows.

One of the biggest points for anti-Linux Windows users to harp on about is that the open source model leads to a lack of truly well designed and implemented applications — especially compared with versions that are available for the Windows platform.

XMMS is one of the best ways to shut them up. It's undoubtedly the premier audio player for Linux, and shares many features with Windows-based WinAmp.

Like WinAmp, XMMS has support for streaming audio, playlists and plugins, and you can even save a live audio stream from the Internet to your hard disk. The X MultiMedia System (XMMS) can be downloaded from www.xmms.org.



Real Player is one of the best audio and video streaming applications for Linux.

OGG VORBIS

The OGG sound format has emerged in recent years as an open source, non-proprietary format designed to deliver high-quality compressed audio without any of the closed source, royalty and licensing issues surrounding other proprietary formats like WMA, MP3 and MP4. It enables encoding at 48KHz (higher than CD quality), and at a variety of bitrates, which places OGG above MP3 in terms of audio quality and fidelity.

If you are recording songs onto your computer to play at home, the OGG format is an excellent choice, as it is open source and the quality of the audio is high. A number of OGG players exist for both Windows and Linux, including a plugin for XMMS. See www.ogg-vorbis.com for details on the OGG format.

MOD FILES

One of the earliest forms of widely distributed computer-recorded music was the Amiga MOD format. MODs originally appeared on the Amiga in the late 1980s, and were limited to four tracks and 32 musical samples, nicknamed "modules". Each sample could be recorded individually and then played back at different volumes, pitches, and durations according to a pattern entered by the composer.

This enabled extremely high-quality music to be created whilst keeping the file size low, as each sample is only stored once yet played back over and over again to produce the tune.

For this reason, MOD files (and subsequent updates to the format including S3M, XM and IT) have been widely used in demos and games (Unreal for example). You can find details on the thriving "tracked" music scene at www.scene.org.

One of the world's best-known and



Countless SHOUTcast servers around the world are waiting for you to log in and tune out.

most prolific MOD composers is Mick Rippon, hailing from Newcastle in NSW. His website (www.mickripton.com) contains over 100 free instrumental tracks for download, and because of the size of MOD file, the vast majority are less than a megabyte in size.

The site is updated by Mick himself, and he openly invites reviews and comments on his music. MikMod is the best player for the MOD format, and is

available for Linux and Windows. You can download the MikMod plugin for XMMS from www.mikmod.org.

PLAYING WINDOWS MEDIA

Unfortunately, the Windows Media Format remains largely unsupported under Linux. A cross-platform version of the Windows Media Player was released in 1998, and despite Microsoft claiming that updates would be released, the

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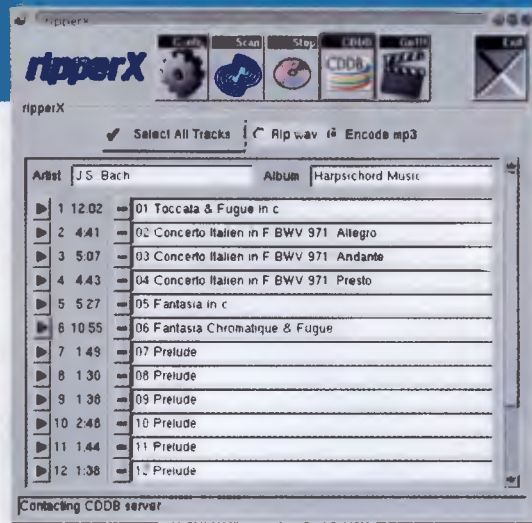
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► Who said Linux apps had to be ugly and hard to use? RipperX shows Windows how it should be done.

development didn't continue.

As the Windows Media Format is a proprietary format that's owned by Microsoft, there is currently only a limited number of libraries available for Linux that are capable of understanding the WMA/WMF format, and they are direct ports from Windows libraries.

RIPPING CDS UNDER LINUX

One of the benefits of modern computers is that storage is cheap. This enables you to store enormous quantities of data arbitrarily, whereas in the past you were forced to prioritise in terms of what you store on the hard disk, and what remains on floppy or CD. Entire CD or tape collections can be "ripped" to the hard disk, so it's conveniently accessible whenever you'd like to listen to it.

Instead of having to change CDs whenever you'd like to listen to a particular song or album, you merely have to click on the file and it will spawn your favourite player. Myriad programs exist to rip CDs onto the hard disk, but arguably the best ripper for Linux is RipperX, (www.digitallabyrinth.com/linux/ripperX), that lets you rip CDs directly to MP3 for archiving.

It has plugins for a lot of popular encoders and features support for the CDDb database, so you avoid entering song data by downloading album details over the Internet.

If you are looking to use a separate program to convert CD data to WAV first, then look no further than CD Paranoia III (www.xiph.org/paranoia) which began life as a set of patches for Heiko Eissfeldt's cdda2wav application.

BIG AUDIO DYNAMITE

A second advantage of modern computing, thanks largely to the widespread advent of the Internet, is that bandwidth is also inexpensive. Hordes of Internet "radio" stations have sprung up since 1996, and many radio stations that broadcast on the airwaves also stream shows on virtual versions.

Radio stations like Triple J (www.abc.net.au/triplej) generally stream audio in either the Windows Media player or RealAudio formats, so you will need an external player in order to decode the streams.

In February 2002, CodeWeavers announced an application called CrossOver Plugin 1.1, which enables Windows browser plugins to work on Linux browsers, including streaming Windows Media files. A better alternative, where offered, is to use RealAudio, as a native Linux player exists (www.real.com.au).

SHOUTCAST

A second method for streaming audio is to use a system developed by WinAmp creators, Nullsoft, called SHOUTcast. SHOUTcast broadcasts were designed to be streamed directly into WinAmp (or XMMS under Linux), and the bitrate is adjustable depending on your connection speed.

Literally thousands of SHOUTcast servers exist around the world, broadcasting into the ether around the clock. An excellent list of online SHOUTcast servers, sorted by genre, can be found at www.shoutcast.com.

STREAMING YOUR MP3 FILES VIA LINUX

Imagine you are at home working on your computer and you decide that you'd like the same music playing upstairs as is being played in the lounge room (although your Linux box and MP3 repository is sitting downstairs in your living room).

The best way to do it is to set up your Linux box to stream audio content, so you can "tune in" and listen from any machine in the house (or remotely if you have a broadband Internet connection to your house). You can even set up a "radio station" for the office and let your office mates tune into your playlists.

Icecast is an open source, SHOUTcast-compatible broadcasting application designed for streaming MP3s over a network or the Internet. It was developed in January 1999 as an open source project distributed under the GPL. The current build includes support for high-bitrate streams (160KHz) and advanced security features.

You can find source as well as packages for RedHat and Debian from www.icecast.org.

YOU CAN'T STOP THE MUSIC

You've been collecting MP3s for a couple of years now, and you've got files creeping into virtually every spare byte of hard disk space.

While your music collection is enormous, and your playlists extremely varied, it takes you ten minutes to find each song that you want to listen to because your songs aren't catalogued, and, as a result, you only listen to about 10% of the files on your drive.

The best available is the open source project of Benny Müller, entitled MP3 Database (which unfortunately has recently been abandoned, and requires someone to step up and take over development).

You can find MP3 Database at <http://mp3-database.sourceforge.net> ■

Before **MATT OVERINGTON** began working with APC, he lost countless hours of his life and handfuls of his hair attempting to make PCs talk to each other. He can be reached at moverington@apcmag.com

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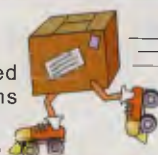
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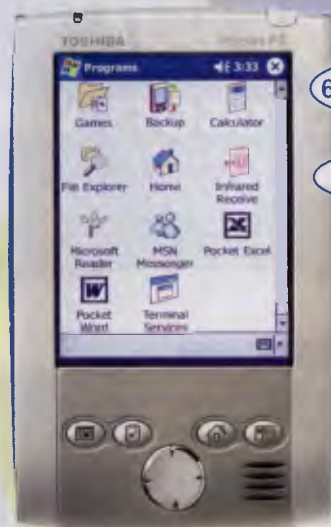
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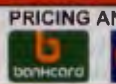
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- Bundled remote control Ceiling and tripod mounting (Optional)
- Integrated zoom lens



Rent* \$85.34/wk (E5955) **\$9,995^{RRP}**

MAY

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COMPAQ

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www.ht.com.au/cat/compaq

Notebooks and Wireless LAN

Evo N160 Notebook

The Evo Notebook N160*

is the ideal thin and light notebook for customers seeking great value for money without sacrificing superior performance.

- Intel Mobile Celeron 1066MHz processor
- 14.1" Colour TFT XGA display
- 128MB SDRAM
- 20GB hard drive
- Removeable 8X DVD-ROM drive
- 3.5" 1.44MB diskette drive
- Integrated Mini PCI 56K modem and 10/100 ethernet
- Windows 2000

Rent* \$29.37/wk (E1102) **\$2,995**

- Intel Mobile Pentium III 1.2GHz processor
- 14.1" Colour TFT XGA display
- 256MB SDRAM
- 30GB hard drive
- Removeable 8X DVD-ROM drive
- 3.5" 1.44MB diskette drive
- Integrated Mini PCI 56K modem and 10/100 ethernet
- Windows 2000

Rent* \$37.22/wk (E1998) **\$3,795**



Ask
About...



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The figures quoted are based on a per week basis over 3 years. T.A.P. Terms & Conditions apply.

Evo N115 Notebook Series

The Evo N115* all-in-one notebook is designed for growing businesses and offers exceptional value-for-money, without sacrificing performance.

- AMD Duron 1000MHz processor
- 14.1" Colour TFT XGA display
- 128MB SDRAM
- 20GB hard drive & 1.44MB 3.5" FDD
- 24X CD-ROM
- Mini PCI 56K modem & 10/100 ethernet
- Windows XP Professional

Rent* \$24.47/wk (E1121) **\$2,495**

- AMD Athlon 1.2GHz processor
- 14.1" Colour TFT XGA display
- 256MB SDRAM
- 20GB hard drive
- 8X DVD-ROM drive & 1.44MB 3.5" FDD
- Integrated Mini PCI 56K modem and 10/100 ethernet
- Windows XP Professional

Rent* \$29.37/wk (E1118) **\$2,995**



For all
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short
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computer
hire
needs

KWIKTRON
Kwiktron's vast inventory of the latest equipment is in-stock and ready for immediate delivery.

02 9774 8666

*Compaq 1 Year Limited International Warranty, including pick-up anywhere in Australia, with a 48-hour service workshop turnaround repair time.

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Email: sales@ht.com.au



Delivery
Australia-Wide

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hp e-PC Series

hp e-PC 40 Series*

small, silent, stylish

global, stable, flexible PCs to reduce lifecycle cost

Stable PCs designed to provide the best choice in configuration flexibility and performance. Innovative features and tools that let you reduce PC lifecycle cost through comprehensive deployment, management and support solutions.

the e-pc 40

- PC reinvented for lowest TCO: With the e-pc 40, HP has reinvented the desktop PC as a smaller, simpler, and more reliable device to further reduce total cost of ownership (TCO) and improve user comfort.
- small, silent, stylish: About the size of a dictionary, the e-pc 40 fits almost anywhere. Its versatility and low noise optimises your working comfort.
- e-pc with Celeron™ processor: The e-pc 40 offers the Celeron processor, with integrated graphics and LAN interface in an ultra-small form factor.

HP e-PC 40 C1.1 GHz
128MB 20GB(7200) CD

Windows XP Home
(E5837)

Rent* \$21.58/wk

\$1,695

HP e-PC 40 C1.1 GHz
128MB 20GB(7200) CD

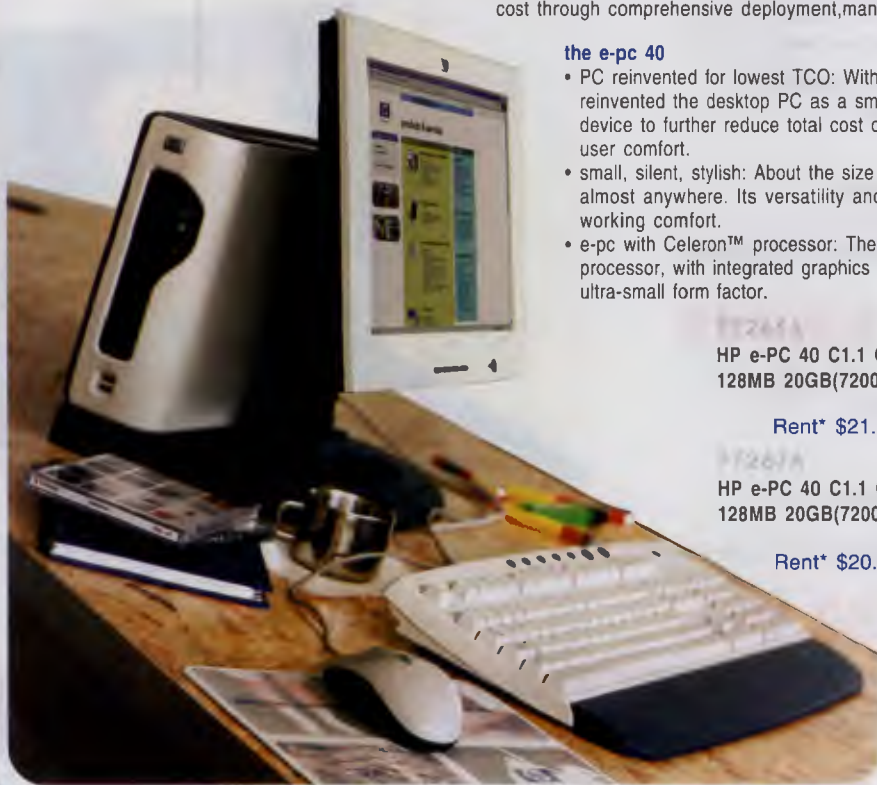
Windows XP Pro

(E5856)

Rent* \$20.22/wk

\$1,845

*Monitor Not Included
Image for illustration purposes only.



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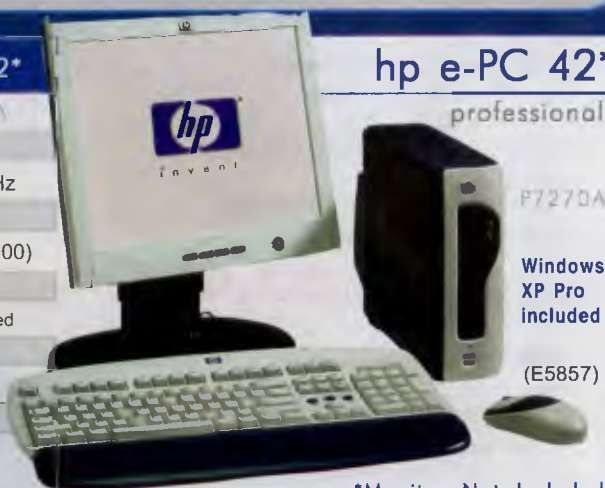
Kwiktron's vast inventory of the latest equipment is in-stock and ready for immediate delivery.

02 9774 8666

hp e-PC	e-PC 40*	e-PC 42*
hp e-PC 40 C1.1 GHz	F7265A	F7270A
PROCESSOR	Cel 1.1GHz	P4 1.8GHz
SD RAM	128Mb	256Mb
HARD DRIVE	20GB (7200)	20 GB (7200)
CD-ROM	-	yes
Monitor	not included	not included
Built-in LAN	Yes	yes
WARRANTY	1 Year	1 Year
WINDOWS XP HOME	(E5827)	
Rent* /wk	\$16.88	
	\$1,540	
WINDOWS XP PRO		(E5857)
Rent* /wk		\$27.05
		\$2,759

hp e-PC 42*

professional



**Windows
XP Pro
included**

(E5857)

*Monitor Not Included
Image for illustration purposes only.

The e-pc 42 offers a Pentium 4 processor with integrated graphics and LAN in an ultra small form factor.

MAY

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hp networks & servers

NEXT BUSINESS DAY ADVANCE REPLACEMENT - LIFETIME WARRANTY*****PLEASE NOTE THAT PRICES ARE SUBJECT TO CHANGE ON ALL PRODUCTS*****

hp procurve switch 2512 & 2524

9.6GB PS BACKPLANE & AUTO-MDIX •Lowest Price 10/100 Managed Switch •Provides a rich, layer 2 feature set •Includes 2 transceiver slots for upgrade to a gigabit •Auto MDIX on all 10/100 and 100/1000 ports •Lifetime warranty for as long as you own the product •Wire-speed performance on all ports •FREE HP TopTools Management Software included.



procurve switch 2512

(12 port managed switch)

Rent* \$17.63/wk (A9703)

\$1,609

procurve switch 2524

(24 port managed switch)

Rent* \$23.33/wk (B0062)

\$2,129

hp procurve switch 2312 & 2324

Ideal for low-cost, unmanaged 10/100 connectivity •Lowest Price 10/100 Switch •Includes 2 Built-in Gigabit transceiver slots •Brings 10/100/1000 solutions to the market •Media-flexible ports for uplinks and server connections •HP quality, functionality and performance •Plug and play solution



procurve switch 2312

(12 port unmanaged switch)

Rent* \$10.73/wk (B0063)

\$979

procurve switch 2324

(24 port unmanaged switch)

Rent* \$15.22/wk (B0064)

\$1,389

HP ProCurve Switch 408

Unmanaged 8 port 10/100 switch in a compact sized package.

This switch offers half/full duplex, 10/100 autosensing on every port.

Warranty: Lifetime, Exchange Next Day

(C9017)

\$388

hp netserver tc2100 Series

the server with the best price/performance value for small businesses

P4653A Features:

Intel Pentium III 1.26GHz, 128MB SDRAM, 512KB L2 cache, 48x CD-ROM, 40GB IDE HDD, FDD, dual-channel UATA/33/66/100 IDE controller, 10/100TX LAN, 6 shelves, 5 PCI slots, tc2100 startup CD. Warranty : 3 Year Next Day, On-Site

P4653A hp server tc2100 PIII/1.26GHz 40GB IDE

Rent* \$22.54/wk (E1257)

\$2,299

P4652A Features:

Intel Pentium III 1.26GHz, 128MB SDRAM, 512KB L2 cache, 48x CD-ROM, 18GB SCSI HDD, FDD, single-channel Ultra 160 SCSI controller, 10/100TX LAN, 6 shelves, 5 PCI slots (4 available on SCSI model), tc2100 startup CD. Warranty : 3 Year Next Day, On-Site

P4652A hp server tc2100 PIII/1.26GHz 18GB SCSI

Rent* \$30.06/wk (E1258)

\$3,065**NEW features****Web Direct**

See Web Direct Link

(at top of page) for more products and latest info!

hp netserver tc3100 Series

Features:

Intel Pentium III 1.26GHz, 256 ECC SDRAM expandable 4 Gig, 512KB L2 Cache, 48x CD-ROM, 1.44 MB floppy drive, Integrated network Card NIC, Integrated dual-channel ultra 3 SCSI Controller, 8 shelves, 6 PCI slots, tc3100 startup CD.

Warranty : 3 Year Next Day, On-Site

P3506A TC3100 PIII-1.26GHZ SCSI 18GB Hard Drive

Rent* \$40.88/wk (E4241)

\$4,375

P7658A TC3100 PIII-1.26GHZ SCSI 18GB Hard Drive HS (hot swap drives)

Includes: Dat 24i Tape Back-up unit pre-installed.

Rent* \$52.40/wk (E4242)

\$5,749**NEW netserver**

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Special Offer

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(E4197) with
the first 50
purchases of
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Personal
Storage
Firewire
Drive. (E4068)
(E4066)
(E4067)
Available until
31st May
2002



Maxtor®

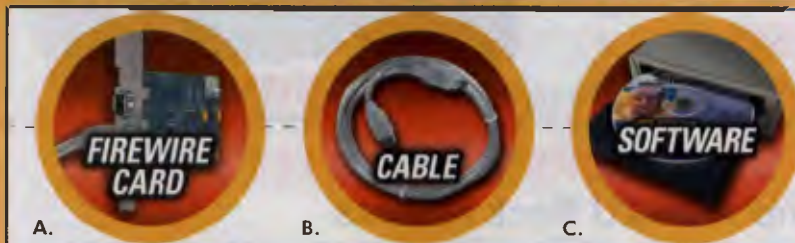
Maxtor DV Producer™ is one of the easiest ways to turn your home videos into Hollywood-style movies. Regardless of your skill level, the flexible, easy-to-use software will let your creativity soar with artistic templates, realistic special effects, professional transitions and titling, and multiple audio tracks. Everything you need is included in this kit: A. Maxtor FireWire™ (1394/i.LINK®) card, B. Camcorder cable, C. ArcSoft™ ShowBiz™ video editing software. Make spectacular movies in three easy steps:

Designed for
beginning and advanced
users. Windows® Compatible

FEATURES:

- Easy editing software • Add special effects • Easy installation • Complete kit

Now you're making movies like a professional!



***DV Producer**

\$199 RRP
(E4197)

Maxtor Personal Storage

Ask
About...



- Extend to a total of 3 Years Return to Base
- Extend to a total of 5 Years Return to Base
- Upgrade Return to Base of Warranty Extension to On-Site



Maxtor Personal Storage 3000DV/80GB
Ideal for speed-intensive applications such as editing digital video, playing games, and listening to music. The 3000DV features the Maxtor award-winning 7200 RPM hard drive—up to 56% faster than 5400RPM external hard drives.

80GB(E4068) **\$880**



Maxtor External Storage 3000XT/80GB/160GB
With the highest capacity maxtor offers, this is the perfect external storage solution for today's storage-hungry digital entertainment equipment. Run applications, edit videos, listen to music, download files, or play games, or store all your important documents and precious memories.

80GB(E4066) **\$735**

160GB(E4067) **\$985**



Maxtor Personal Storage 3000LE/40GB/120GB
Instantly add storage for your digital photos, videos, MP3 songs, games, and important electronic files. The USB 2.0 interface is up to 40 times faster than USB 1.1. The 3000LE is compatible with virtually all existing USB ports—offering connectivity for today's systems and speed for tomorrow's technology.

40GB(E4064) **\$489**

120GB(E4065) **\$749**

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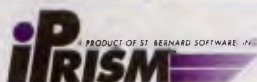


Next Generation Backup Solutions

DLT & LTO TAPE DRIVES



DLT1 economy tape Internal Drives	Rent* \$27.36/wk (88037)	\$2,790
DLT1 economy tape External Drives	Rent* \$32.75/wk (88038)	\$3,340
DLT8000/S Internal 40/80GB	Rent* \$53.00/wk (82501)	\$5,815
DLT8000/ST External 40/80GB	Rent* \$58.51/wk (82502)	\$6,419
SDLT220/S Internal 110/220GB	Rent* \$89.90/wk (B9821)	\$10,529
SDLT220/ST External 110/220GB	Rent* \$92.12/wk (B9823)	\$11,245
LTO Ultrium Internal 100/200 GB	Rent* \$88.37/wk (D1509)	\$10,350
LTO Ultrium External 100/200 GB	Rent* \$93.88/wk (D1508)	\$10,995



iPrism Internet Filter Appliance

- Dedicated system filters internet traffic continuously
- Over 65 categories updated automatically every 24 Hrs.
- Limits legal liability of unauthorised site access
- Excellent for Schools, Corporates, Government.
- Plug and Play, no extra hardware needed.
- Helps restore network /internet bandwidth
- Increases employee productivity

50 user licence: Rent* \$92.25/wk (E3950) **\$10,805**

TapeWare

BACKUP SOFTWARE

Backup for NT, Network or Linux

TapeWare - Loaded with features yet simple to use. TapeWare is simple to install and easy to administer whether you have a single PC or a large enterprise network.

- Quick Start Wizards set up common applications quickly
- Advanced and predefined scheduling features
- Built in free 9 slot autoloader support
- Desktop, Single Server, Enterprise & Data Center Versions
- Options for MS-Exchange, Cluster, SQL, etc.

Tapeware Lite for Windows

Single Server Licence: Rent* \$7.45/wk (E1612) **\$680**



VXA

EXABYTE VXA-1 TAPE DRIVE

- 12/24, 20/40, 33/66 Gbyte capacity tapes
- 3-6MB sec sustained, that's 21.6GB/Hr
- IDE, Firewire and LVD models available.
- Retrospect or Tapeware Bundles available.

VXA 1 TAPE DRIVE

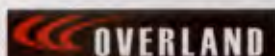
Internal	Rent* \$23.78/wk (C1847)	\$2,170
External	Rent* \$24.47/wk (C1915)	\$2,495
Extrenal Firewire Kit	Rent* \$29.22/wk (B1856)	\$2,980

EXABYTE MAMMOTH 1 TAPE DRIVE

Industry standard backup: External 20/40GB capacity
Rent* \$59.56/wk (E1609) **\$6,865**

EXABYTE MAMMOTH 2 TAPE DRIVE

High capacity and speed: External 60/150GB capacity
Rent* \$101.33/wk (E1610) **\$12,369**

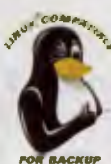


*Super DLT and LTO models also available

DLT1 AUTOLOADER

- 400 GB native, 800 GB compressed capacity
- DLT1 Single Tape Drive included
- 10 tape capacity
- Overland DLT reliability
- LVD 68 pin SCSI interface
- Includes 1 data tape and cable
- 20 GB/Hr throughput.
- 3 year factory warranty
- Optional On-site warranty.

Rent* \$93.91/wk (A0476) **\$10,999**



media

DLT Tape Media IIIXT 15/30GB Tape (68362)	\$80
DLT Tape IV Media 20/80GB (71231)	\$155
DLT Cleaning Tapes (97851)	\$90
Super DLT Media 110/220 GB (B9825)	\$330
Exatape 112 - 8mm (C1976)	\$12
Exatape 160 - 8mm (C1980)	\$22
Exatape AME - 125m (C1986)	\$105
Exatape AME- 170m (77600)	\$170
Exatape AME 2-150m (C1989)	\$175
Exatape 8mm Cleaning Tape (C1982)	\$29
Exatape AME 18c Cleaning Tape (C1983)	\$35
Exabyte VXA1 - V6 12/24 GB (91103)	\$72
Exabyte VXA1 - V10 20/40 GB (C3945)	\$109
Exabyte VXA1 - V17 33/66 GB (91105)	\$189
Exabyte VXA1 - 1m Cleaning Tape (91104)	\$75
LTO Ultrium 100/200 GB Tape (D1500)	\$298

MAY

17

The leader in Internet Security

Symantec Firewall/VPN Appliance (Models 100, 200, 200R)

For small offices or large organisations with remote or branch offices, the Symantec Firewall/VPN Appliance is an integrated office networking and security appliance that enables quick, easy, and secure access to or from the Internet. Symantec Firewall/VPN Appliance;

- Provides high-speed access, reliable connectivity, ample bandwidth, and easy remote management and monitoring.
- Provides secure Internet connectivity and protects networks with integrated firewall functionality.
- Enables secure remote access to your office from other locations with built-in VPN capability
- Delivers security and networking for small offices and remote office locations with a single, multi-function device.
- Ensures secure, cost-effective access to networks for remote offices and business partners through an integrated IPSec VPN.

Easy-to-Use, All-in-One Appliance comes in three models to meet varying network traffic and remote access requirements, with no per-user licensing requirements. Installs quickly and easily, offering small offices a turnkey solution for securing outbound and inbound Web, email, FTP traffic, and more.



• Symantec Firewall/VPN Model 100

(5 ports)—Provides plug and play networking, web access, and firewall and VPN security for up to 25 users*.

Rent* \$10.24/wk (E0950) **\$939**

• Symantec Firewall/VPN Model 200

(10 ports)—Brings firewall and VPN protection, load-balancing, and high availability to offices with up to 40 users*.

Rent* \$18.62/wk (E0960) **\$1,699**

• Symantec Firewall/VPN Model 200R

(10 ports)— Brings firewall and VPN protection, load-balancing, and high availability to offices with up to 40 users*. Also includes the remote Symantec VPN Client (with integrated personal firewall) that lets you set up a remote virtual private network to securely connect mobile users.

Rent* \$24.10/wk (E0963) **\$2,199**

*No license limitation on the number of users/nodes.

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VPN
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EARNS
EDITORS'
CHOICE
AWARD
FROM PC
MAGAZINE

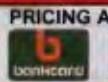
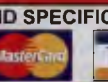
Five-Star
Rating Puts
Appliance at
Top of Security
List for Small
Offices


DON'T
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your
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points!

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elantra

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Web Direct

www.ht.com.au/cat/elantra

Back up, Fast, Simple, Automatic...

Automatic backup. Automatic peace of mind.

It saves even if you forget - the industry's first solution for automatically backing up notebooks and desktops.

The Automatic Backup System (ABS) from CMS includes revolutionary 'Automatic Launcher' and 'Disaster Recovery' technologies - when the unit is plugged in, powered on, or scheduled, it scans your drive and copies only files that have been changed or created since the last backup. You can backup, store and share all types of files between notebooks and desktops. It's small and lightweight too - take it anywhere. Models compatible with Windows® 95B, 98, Me, NT 4.0, 2000 & XP.

NEW!



*Picture for (D9245) or (D9246)

KEY BENEFITS

- Fast, safe, secure, reliable
- Single file or full restore
- Incremental backup
- Bootable drive
- 3 year hardware guarantee
- Multi-purpose backup and external storage

Portable

PCMCIA 10GB

Rent* \$7.83/wk
(D9244) **\$715**

*Firewire 10GB

Rent* \$7.83/wk
(D9246) **\$715**

*ABSplus USB 2.0 10GB

Rent* \$7.83/wk
(D9245) **\$715**
30, 40Gb available

Desktop

20GB ABS FireWire

Rent* \$9.85/wk
(D9251) **\$899**

20GB ABS USB 2.0

Rent* \$9.85/wk
(D9250) **\$899**

20,40,60,80,100Gb available

Web Direct

See Web Direct Link

(at top of page) for more products and latest info!

Prices are subject to change. Check here for latest prices & products!!

Web Direct

www.ht.com.au/cat/sonicwall

SONICWALL

SonicWall - Single Stop Security

In just one SonicWall firewall appliance, you get

- > ICSA-certified, stateful packet inspection firewall
- > IPSec VPN for remote access
- > IP address management features
- > Authentication capabilities
- > Network anti-virus
- > Content filtering
- > Reporting features
- > Redundancy options
- > Vulnerability scanning services and more

PLUS the new ASIC-Based processor gives you performance ten times faster at lower prices. Starting from the entry-level model @ 75 Mbps firewall throughput up to the gigabit multi interface model @ 1.67 Gbps firewall throughput, the SonicWall firewall range is a cost effective versatile solution for IT security managers.



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Tele3 5 user

Rent* \$12.00/wk (E0969) **\$1,095**

SOHO3 10 user

Rent* \$12.00/wk (E0970) **\$1,095**

SOHO3 50 user

Rent* \$23.23/wk (E0971) **\$2,120**

PRO 100 unlimited users

Rent* \$37.55/wk (E0576) **\$3,829**

PRO 200 unlimited users

Rent* \$56.59/wk (D8159) **\$6,209**

PRO 300 unlimited users

Rent* \$71.35/wk (E0974) **\$8,224**

PRO 100 unlimited users

Rent* \$217.71/wk (E0975) **\$26,955**

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NETGEAR™

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Everybody's Connecting

Modular Solutions

New Business
Solutions

Connect with copper or fibre gigabit. Link up to high-speed servers, connect switches, and combine fibre and copper networks. Two module bays on NETGEAR's FS700 series Modular Fast Ethernet Switches give you extraordinary upgrade flexibility. These non-blocking 19" units provide 24 or 48 10/100 Mbps, auto-sensing ports with Auto Uplink™ support.

FS726 24 Port 10/100, 2 Module slots



Rent* \$15.56/wk
(D0873)
\$1,420

FS750 48 Port 10/100, 2 Module slots



Rent* \$23.63/wk
(D0874)
\$2,410

AG711T

Copper module



Rent* \$7.39/wk (D0921) **\$675**

AG711F

Fibre module



Rent* \$10.30/wk (D0924) **\$940**

Managed Solutions

NETGEAR's Layer 2 non-blocking managed switches boost small business networks with 24 10/100 ports, 2 stacking ports, and 2 gigabit ports - use built-in Copper Gigabit or GBIC slots. Management includes SNMP, RMON, VLAN, QoS, port trunking, Spanning Tree, and port mirroring. All ports are auto-negotiating and support Auto Uplink™ technology.



FSM 726S - Managed 24 port
10/100 switch with 2 stacking ports
and 2x Gigabit ports

Rent* \$23.41/wk (D8885)
\$2,136

Gigabit Solutions

These high performance Gigabit switches provides either fibre or copper backbone connectivity for power workgroups, data centres and server farms. No additional modules are required - each product is ready to install straight from the box.

GS 508T

8 port 10/100/1000
Gigabit switch

Rent* \$27.74/wk (B9916)
\$2,829

GS524T 24 port

10/100/1000 Mbps Gigabit
Switch

Rent* \$46.57/wk
(D5961) **\$5,110**

FS 518T 2 port 100/1000
with 16 ports 10/100

Rent* \$23.40/wk (A1374)
\$2,135

GS516T 16 port
10/100/1000 Mbps Gigabit
Switch.

Rent* \$37.70/wk (D5960)
\$3,844

FS 309T 8 10/100 ports
1Gig Uplink

Rent* \$6.78/wk (D8887)
\$619

FS 517TS 1 port
100/1000 and 16 port 10/100
stackable switch (copper)

Rent* \$17.97/wk (C2299)
\$1,640



GS524T

Switches

FS 105



FS 105 5 port 10/100
auto-sensing switch (84722) **\$149**

FS 516 16 port 10/100 auto-sensing
and internal PSU/Vista
Rent* \$8.38/wk (60522) **\$765**

FS 108 8 port 10/100
auto-sensing switch (70905) **\$229**

FS 524 24 port 10/100 auto-
sensing switch
Rent* \$9.30/wk (77549) **\$849**

FS 524



FS 116 16 port 10/100
auto-sensing switch (A5347) **\$499**

FS 524S 24 port 10/100 auto-
sensing switch - stackable
Rent* \$17.41/wk (B6540) **\$1,589**

Network Cards

FA 311
Ethernet
Adapter
10/100 PCI
(A1372)
\$42

FA 312
10/100
Wake on Lan
Ethernet
Adapter
(A1373)
\$45

FA 411
10/100
Mbps PC Card
(No dongle
required)



(B9944)
\$125

FA511
10/100
CardBus PC
Card
(No dongle
required)
(D4112)
\$129



GA 302T
32 bit PCI
Gigabit
network card

(D4118)
\$172

GA 622T
32/64 bit PCI
Gigabit
network card
(B9943)
\$355

MAY

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HARRIS TECHNOLOGY™



PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

FINANCE METHODS
ARE SUBJECT TO
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NETGEAR™

Prices are subject to change. Check here for latest prices & products!!

Web
Direct

www.ht.com.au/cat/netgear

Wireless Networking & Routers



Wireless

The NETGEAR wireless family means that you never have to be tied down by your cabling again! Whether you are looking to add to your wired Ethernet network or set up a new network the NETGEAR wireless products allow you to share network resources. These plug and play devices enable homes and businesses, even those without network IT staff, to deploy and maintain wireless networks easily and reliably. The new 802.11a solution transfers data at 54 Mbps and 72 Mbps in turbo mode for more efficient downloads of high-bandwidth applications.

802.11b Products - 11Mbps



MA 101
11Mbps
Wireless USB
Adapter
(C7110)
\$229



MA401
11Mbps PCMCIA
Adapter
(C8117)
\$185



MA301
11Mbps PCI
Adapter Cradle
(Requires MA401)
(B9927) **\$98**



MA701
11Mbps Compact
Flash Card
(E5891)
\$Call



ME102
11Mbps Wireless
Access Point
(B9929)
\$549



MR 314 11Mbps
Cable/DSL router
with integrated 4 port
10/100 switch & built
in access point
Rent* \$6.52/wk (C5223)
\$595

802.11a Products - 54Mbps



HE 102
54 Mbps Wireless Access
Point

(E5824) **\$1,399**

NEW



HA501
54Mbps Cardbus PC Card

(E5826) **\$599**

Routers

NETGEAR have a comprehensive range of Cable/DSL routers. All products offer standard shared internet access with NAT Firewall security and easy installation via web based configuration and DHCP. The products are plug and play and ideal for connection to either Cable/DSL or satellite broadband services. www.netgear.com.au offers specific installation information on both Telstra and Optus services.

RT 311 Cable/DSL router with
1 10/100 port
(97719) **\$299**



RP114 Cable/DSL router with
integrated 4 port 10/100 switch and
ability to control web content
(C5592) **\$329**

RO318 Cable/DSL Security router
with integrated 8 port 10/100 switch
(C4896) **\$509**

FR318 Cable/DSL firewall
router with integrated 8 port 10/100
switch upgrade to vpn end point
Rent* \$7.94/wk (D1526) **\$725**

FV318 Cable/DSL VPN Router
includes 5 VPN end points, firewall
and integrated 8 port 10/100 switch
Rent* \$18.25/wk (C2298) **\$1,665**

Printer Servers

The
NETGEAR
print servers
enable you
to connect
your printers
to a network
for sharing
amongst
multiple PCs.



PS 101
1Port Mini
Print Server
(E5832)

\$Call



PS 111W
Wireless
Ready Print
Server
(E5833)

\$Call



PS 110
10/100 Mbps
Print Server,
2 parallel
ports
(67226)

\$259

PS 113
10/100 Mbps
Print Server,
3 parallel
ports (A3287)

\$365

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The figures
quoted are based
on a per week
basis over 3
years. T.A.P.
Terms &
Conditions apply.

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Sales: 1300 13 9999
Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au

HARRIS Technology Centre
at Kmart Broadway-Sydney

Small-Medium Business Networks

ADSL Modem /Router

DSL-504 ADSL Router with 4 port 10/100 Switch
Connect single or multiple PCs
on an Ethernet LAN to an ADSL
(C7593) **\$589**

DSL-300 Ethernet ADSL Modem
Connect single PC on an
Ethernet LAN to an ADSL
(B7198) **\$399**

DSL-100D Internal PCI ADSL Modem
Compatible for Windows based PCs to
connect via G.lite or G.dmt
(B7196) **\$229**

DSL-200

USB ADSL Modem.
Plug and Play USB
interface with the host
PC through a USB port

(B7197) **\$305**

DSL-500 ADSL Router Connect single
or multiple PCs on an Ethernet
LAN to an ADSL
(D0801) **\$410**

New Product



Web Direct

See Web Direct Link

(at top of page) for more products and latest info!

IP Router for ADSL/Cable Modem

DI-704P

IP Router for DSL/Cable Modems
with 4-Port Switch & Single Port
Print Server

(E5861)

\$Call

DI-713P 11 Mbps Wireless IP Router for xDSL
and Cable modems with 3-port 10/100Mbps
switch and print server
(C7596) **\$729**

DI-804 IP Router for DSL and Cable
Modems with 4-port 10/100Mbps switch

(C2361) **\$255**

New Product



10/100 Switches

DES-1016R+ 16 Port 10/100 Mbs Fast
Switch, Optional 2-Port 100 Base FX Fiber
(DES-102F)

(D4164)

\$699

DES-1005D 5 Port 10/100Mbps
Fast Ethernet Switch with 5 x N-Way
UTP Ports. Palm Size

(85101)

\$149

DES-1008D 8 Port 10/100Mbps Fast
Ethernet Switch with 8 x N-Way
UTP Ports. Palm Size

(98254)

\$239

DES-1024R+ 24-Port 10/100 Mbs Fast
Ethernet Switch, Optional 2-Port 100 Base
FX Fiber (DES-102F)

(E3669)

\$849

DES-1032 32 Port 10/100Mbps Fast Ethernet
Unmanaged Switch with 32 N-Way UTP Ports.
Rackmount Size

(B7165) **\$1,299**

Gigabit Solution

DES-1009G

Gigabit ethernet Switch 8 Port 10/100Mbps
Unmanaged Switch with 1 Port 1000Base T
Gigabit (Copper)

Copper
Gigabit

(D1196)

\$494

DGE-500T 32-Bit PCI Bus
Copper (RJ45) Gigabit
Ethernet adapter

(E2058) **\$89**

DES-1226 24-Port
10/100Mbps Fast Ethernet
Unmanaged Switch with Option
Slot or 2-Port Gigabit Module

(B7168) **\$925**

DES-1218 Gigabit Ethernet Switch
Unmanaged - 16 Port 10/ 100Mbps
with Optional 2 x 1000
Base T Ports (DES122T)

(B7166) **\$659**



For all your small to medium business and home network needs please call for more information and pricing. We have an extensive range of fantastic D-Link products on our database.

MAY

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Home Networking

Wireless Solutions

DWL-1500

D-Link Air 11 Mbps Wireless LAN Indoor Bridge with POE Ethernet to Wireless LAN multipoint Bridge or Access Point. Built in Power over Ethernet.

Special Price

(D9147) **\$659**

New Product



DWL-900AP D-Link AIR 11 Mbps Wireless LAN Access Point (E5877)

New Special Price

DWL-650 11 Mbps Wireless LAN PCMCIA Card (A9247) **Special Price \$249**

DWL-520 11 Mbps Wireless LAN PCI Adapter (D9148) **Special Price \$295**

DWL-1000AP 11Mbps Wireless LAN Access Point (A9251) **Special Price \$589**

Ethernet Networking

DCS-1000

The DCS-1000 Internet Camera is a stand alone system connecting directly to an Ethernet or Fast Ethernet network.

(E3900) **\$879**

New Product



DSS-5+ 5 Port 10/100 Mbps Dual Speed Switch (89269) **\$145**

DSS-8+ 8 Port 10/100 Mbps Dual Speed Switch (C2935) **\$199**

DFE-910 Performance Network Kit 2 x 10/100 MB PCI Network adapters with 5 port 10/100 switch. (88060) **\$269**

DFE-530TX+ PCI-bus 10/100Mbps Fast Ethernet Network Interface Card (88046) **\$42**

DSS-16+ 16 Port 10/100 Mbps Dual Speed Switch (D1525) **\$529**

USB Peripherals

New MP3 Player

DMP-HD610 MP3 jukebox Player (hard drive-based MP3 player.) The equivalent of over 250 CDs with large storage capacity of 10GB. Supports data speed up to 12Mbps for quick downloading music files via USB interface. large LCD screen (64x128 Pixels). Provides 5 hours of music playback with rechargeable Lithium battery.

(E3904) **\$799**



DSB-500 2 Port USB PCI Adapter, provides PC with ability to connect USB devices (D0984) **\$45**

DU-H4 4 USB Type A ports for Downstream connection to 4 USB devices, 1 USB Type B port for Upstream (79131) **\$69**

DSC-100 USB Digital Camera. Multi-purpose 100k Pixel digital camera, record up to 100 still images or 50 seconds of Video. Max Resolution of 352 x 288 (D0985) **\$135**

DSC-350 Dual mode Digital Still camera, USB Multi-purpose 350k Pixel Digital Camera. Records up to 500 still images or 4.5 minutes of video. Max. RES 1024 x 768 (B3268) **\$259**

KVM Switches

KVM-08LB

8 Port Keyboard-Video-Mouse Switch with Keyboard, Mouse & 15 "TFT LCD Screen", Connects up to 8 CPU's. Up to 8 KVM-08LB can be cascaded supporting 64 CPU's. 19" Rackmount.

(D9145) **\$4,052**

New Product



DKVM-2 2 Port Keyboard-Video-Mouse Switch. Connect up to 2 CPU's to one Keyboard, Video & Mouse. (C7576) **\$149**

DKVM-4 4 Port Keyboard-Video-Mouse Switch. Connect up to 4 CPU's to one Keyboard, Video & Mouse (C7604) **\$259**

DKVM-8 8 Port Keyboard-Video-Mouse Switch. Connect up to 8 CPU's to one keyboard, Video & Mouse (B2656) **\$869**



Ask About...



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

MAY

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Not all items are in stock at all stores but can be ordered for Pick-up or Delivery
Delivery charges extra

Prices are subject to change. Check here for latest prices & products!

Web Direct

www.ht.com.au/cat/belkin

Belkin Surge & UPS

UPS SERIES

Regulator PRO Silver Series



Features:

- 2 Year Unlimited Product Warranty
- 175 Joule Energy Rating
- 3 Battery Back Up/Surge Sockets
- 1 Surge Protection Only Socket
- Power Management Software Included
- 1.8m Power Cord
- Telephone/Fax/Modem and UTP (RJ45) Protection
- 1.83m Telephone Cable
- RS-232 Communication Cable
- EMI/RFI Filtration

350VA

F5C350zSER-SB
(192 Watts)

(C9277)

\$189

500VA

F6C500zSER-SB
(300 Watts)

(C9278)

\$249

650VA

F6C650zSER-SB
(360Watts)

(C9279)

\$329

Surge control is important because even small surges or spikes can eventually destroy or affect the performance of expensive electronic equipment such as a computer, phone, fax, TV, VCR, stereo or microwave. Damage can occur either instantaneously or over time as smaller surges cause the gradual deterioration of internal circuitry, to voltage fluctuations.

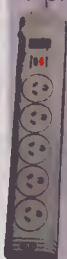
No Hassle Warranties Belkin offer the best Connected Equipment warranties in the business. Full warranty protection means your equipment is insured against damage due to power disturbances of all kinds - surges, spikes, even lightning strikes.

Connected Equipment
Warranty up to \$25,000.

Home Office Range

F5C205z4

Belkin's SurgeMaster line has been designed to protect entry-level computers, dot matrix printers, personal copiers and all other sensitive electronics in the home or office. Telephone/fax/modem protection



5 socket's

27,000 Amps of AC protection

(C4603) **\$79**

Connected Equipment
Warranty up to \$50,000

Superior Grade

F5C206z2

Pentium III computers, audio/video equipment and office equipment need extra protection.

- 6-way Superior Grade range



Blocked space adaptors

AC Line protection

(C4604) **\$105**

Connected Equipment
Warranty up to \$80,000.

Maximum Grade

F5C208z2

Maximum Grade series ideal for protecting commercial business computers, AD and cable modems, high end printers and copiers, and sensitive audio equipment such as satellite receivers and home cinema systems.



8 socket's

39,000 Amps of AC protection

(C4607)

\$135

PDA

ACCESSORIES



Belkin PDA
Portable
Keyboard
Palm 3/5/7

(D5946)

\$159

F5U109
USB PDA
Adapter

(B6768)

\$59



Belkin
4-in-1
Stylus Pen

(C4694)

\$35

USB 4 Port Economy HUB

F5U021-AUS

Add four USB peripherals to your PC and save your precious desktop space without adding clutter. Get Plug-and Play convenience as you add USB printers, scanners, and hard drives.



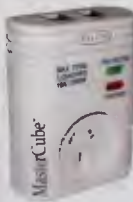
(D5950) **\$45**

Single Surge Cube

F5C195z

(D5966) **\$25**

The SurgeCube™ allows one electronic device to be protected from over voltages. It's ideal for laptops on business or personal trips, or for surge protection in a small space.



F5C195zTEL

The Belkin MasterCube™ protects one electronic device and one phone line from over voltages. Perfect for use with laptops on business or personal trips.

(D5956) **\$35**

USB Media Readers

F5U141

F5U140



The Belkin USB Reader / Writer for SmartMedia CompactFlash I and II, and Multimedia & Secure Digital lets you drag and drop files, images, and music for editing and storage to your PC from your mobile phone, handheld computer, MP3 player or digital camera. Offers Plug & Play, Hot Swap Convenience. Up to 40 times faster than a serial port. Lifetime Warranty & 1800 Technical Support.

F5U140

CompactFlash I and II
(E3833) **\$69**

F5U141

SmartMedia
(E3835) **\$69**

F5U143

Multimedia & Secure Digital
(E3836) **\$69**

USB VideoBus II

F5U208

You create the show yourself with your PC & camcorder merged into a desktop video studio by the Belkin USB VideoBus II. The Belkin USB VideoBus II, complete with MGI VideoWave III SE software, gives your PC the power to make stunning movies & more!



(B4412) **\$145**

USB Pocket Hub

F5U007-UNV-AUS

The Belkin Pocket Hub allows you to instantly connect USB devices such as printers, scanners, external mice and keyboards, joysticks, digital cameras, or other USB hubs without having to restart your computer.



(C4577) **\$65**

MAY

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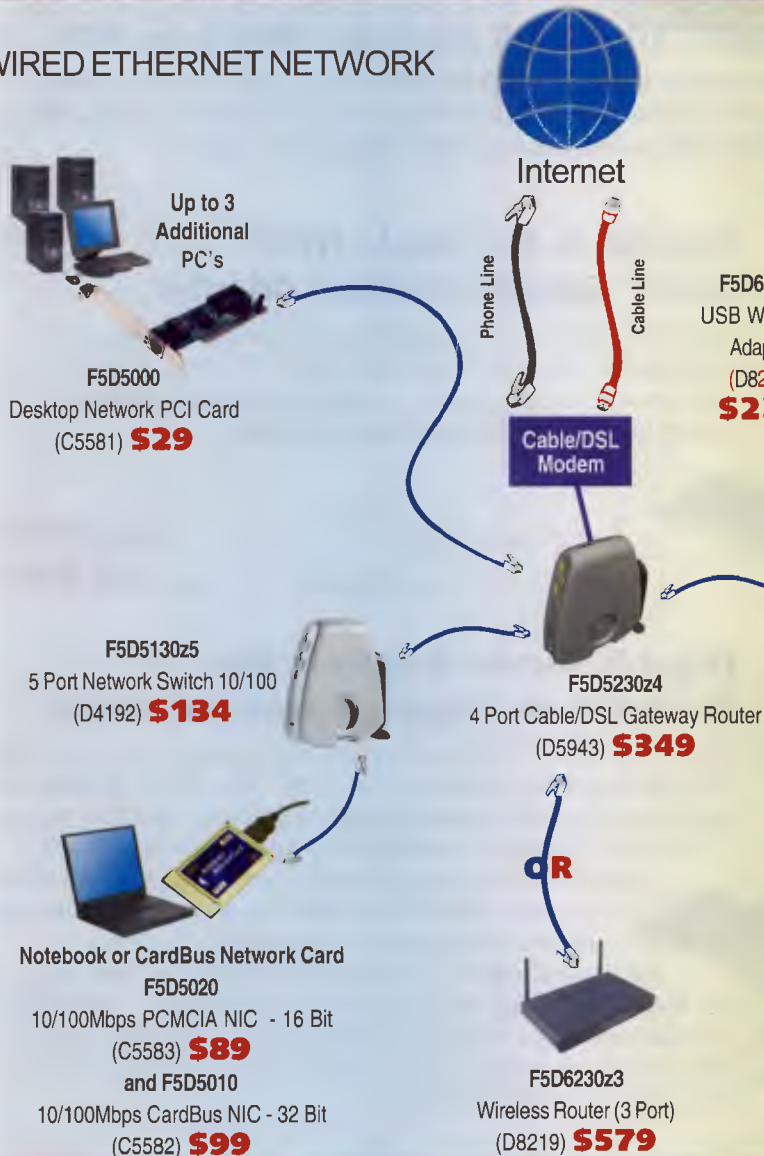
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Belkin Networking Solutions

WIRED ETHERNET NETWORK



WIRELESS NETWORK



	CAT5 Network Cable
	USB Cable
	Cable Line
	Phone Line
	Wireless Link

Cables are not included in prices



F8Q1000

USB iPAQ Sync Charger
Suitable for iPAQ 3700 Sync Series & Below (D5952) **\$37**

F8Q2000

USB iPAQ Sync Charger
Suitable for iPAQ 3800 Sync Series (E4744) **\$37**



F3L900-0 7-ICE-S

Size: 38.11cm x 27.95cm x 10.16cm
*FREE cable comes bundled with this part, available while stocks last
Stone Street notebook bag (D5951) \$69

Belkin - KVM Switches

KVM ESeries

KVM SoHo Range (Keyboard, Video, Mice & Sound Switching)

F1DB102P

Economy-
2 Port KVM Switch - P/S 2



(D3162) **\$84**

F1DB104P

Economy-
4 Port KVM Switch - P/S 2



(D3159) **\$175**

F1DS102P SoHo

2 Port KVM Switch - P/S 2



(D3163) **\$289**

F1DS104P SoHo

4 Port KVM Switch - P/S 2

(D3166) **\$369**

F1DS102T SoHo

2 Port KVM Switch - P/S 2 & USB

(D3165) **\$299**

F1DS104T SoHo

4 Port KVM Switch - P/S 2 & USB

(D3167) **\$385**

Don't forget to include your Belkin All-In-One cables. The easiest & neatest way to connect all your computers and servers to your PS/2 & USB KVM switches, providing image clarity for high-resolution applications.

Ramp Up To Gigabit Speeds

COMPLETE RANGE OF GIGABIT SOLUTIONS AVAILABLE NOW from INTEL

Take advantage of Intel®'s products to help you implement Gigabit technology, and get more bandwidth for less. Network demand is out growing current infrastructure. Fight bottlenecks with industry leading performance – 1000Mbps of throughput over copper or fibre connection for greater distance with less noise.



MAY
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Gigabit to the Desk, NEW Intel® Gigabit Desktop Adapter

Intel® PRO/1000T Desktop adapter, give your high-performance desktops the bandwidth they need. Flexible 10/100/1000 connectivity for easy migration, designed for multi-tasking with today's large files and demanding applications.

1000T Desktop Adaptor

(D5958) **\$199**

1000T Desktop Adapter 20pk-OEM

(D9287) **\$3,829**



Gigabit Server Adapters For Mainstream Copper-Based Networks

Intel® PRO/1000 XT Server Adapters feature advanced auto-sensing and auto-negotiating technology. With this capability, IT managers can deploy adapters into existing Category 5 Ethernet (10 Mbps) or Fast Ethernet (100 Mbps) networks. As the network infrastructure evolves, the adapters will automatically adjust performance to higher Gigabit Ethernet (1000 Mbps) speeds without additional configuration. To help solve network bottlenecks created by bandwidth-intensive applications, such as data warehousing, IP storage and video streaming, organisations are now beginning to deploy Gigabit Ethernet technologies across their entire LAN that allow data to travel over a network at 1 billion bits per second (or 1,000 Mbps).

1000XT Gigabit Server adaptor

(D5959) **\$329**

1000XT L Gigabit Server adaptor (Low Profile)

(D9288) **\$335**

1000XT L5PK Server adaptor (Low Profile) – 5 Pack

(D9291) **\$1,449**



Gigabit Fibre Server Adapters

Featuring the third-generation Intel® 82544EI Gigabit Controller, the Intel® PRO/1000 XF Server Adapter increases server uptime and provides easy-to-manage, multi-Gigabit scalability. The new self-configuring PCI-X interface and TCP checksum offload feature increase throughput while reducing CPU utilisation.

1000XF Gigabit Fibre Server adaptor

(D9289) **\$1,299**

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Intelligent KVM and USB Products

ServerLink SOHO KVM Switches

NEW

Built upon the proven and reliable ServerLink Infinity technology, the new range of ServerLink SOHO KVM switches offer a low cost solution for controlling 2 or 4 computers from a single monitor, keyboard & mouse. All ServerLink KVM switches feature keyboard & mouse emulation to guarantee error free switching and flawless booting.

INCLUDES ALL CABLES!

- SL-251-P** 2 port ServerLink inc. 2 x 2m PS2/VGA cables
SL-451-P 4 port ServerLink inc. 4 x 2m PS2/VGA cables

(E3692) **\$225**
 (E3694) **\$325**

Serverlink Infinity KVM Switches

The ServerLink Infinity range of KVM switches allow you to control up to 256 PCs or network servers from a single monitor, keyboard & mouse. All ServerLink Infinity KVM switches feature user friendly On-Screen-Display for hassle free switching.



ServerLink Infinity Range

- SERVERLINK INFINITY**
SL-221 2 port ServerLink KVM for PS2/VGA
SL-221-P 2 port ServerLink inc. 2 x 2m PS2/VGA cables
SL-421 4 port ServerLink KVM for PS2/VGA
SL-421-P 4 port ServerLink inc. 4 x 2m PS2/VGA cables
SL-821 8 port ServerLink KVM for PS2/VGA
SL-821-P 8 port ServerLink inc. 8 x 2m PS2/VGA cables
SL-1621 16 port ServerLink KVM for PS2/VGA
SL-1621-P 16 port ServerLink inc. 16 x 2m PS2/VGA cables
SL-CKP-02 2m 3-in-1 Comp. to ServerLink cable for PS2/VGA
SL-CKP-03 3m 3-in-1 Comp. to ServerLink cable for PS2/VGA
SL-CKP-05 5m 3-in-1 Comp. to ServerLink cable for PS2/VGA

(B3047) **\$270**
 (B3048) **\$317**
 (A9890) **\$349**
 (B2759) **\$440**
 (97888) **\$979**
 Rent* \$10.73/wk (97888) **\$1,159**
 Rent* \$12.70/wk (97888) **\$1,599**
 Rent* \$17.52/wk (97890) **\$2,019**
 Rent* \$22.13/wk (97891) **\$27**
 (D0973) **\$38**
 (63976) **\$59**

Comsol USB to IrDA Adapter

This adapter is for enabling IrDA wireless data communication through a standard USB port. Ideal for wireless data transfer between desktop PC and notebook or PDA.

UIR-100 USB to IrDA wireless adapter

NEW (D8944) **\$129**

Comsol USB Adapter Cards

- UPCI-100** 2 port USB PCI controller card
UPCI2-100 5 port USB 2.0 PCI controller card - 480 Mbps

NEW (B4493) **\$44**
 (D8945) **\$124**

Comsol FireWire Solutions

- 1394-PCI** 3 port IEEE1394 FireWire PCI card
1394-601 6 port IEEE1394 FireWire Repeater

(D8946) **\$79**
 (D8947) **\$148**

Comsol USB Hubs

- UH-201** 2 port USB Hub
UH-401 4 port USB Hub
UH-701 7 port USB Hub

(82695) **\$47**
 (82696) **\$60**
 (82697) **\$105**

Comsol USB Converters

- UPC-100** USB to IEEE1284 printer converter
UMC-100 USB to RS232 9 pin serial converter
UEC-100 USB to 10/100 Ethernet converter
UKMC-100 USB to PS/2 KB & Mouse converter
USC-100 USB to SCSI 2 (HPD50M) converter

(82692) **\$55**
 (80782) **\$70**
 (82594) **\$145**
 (B0557) **\$70**
 (D0937) **\$180**



Fast Delivery Australia-Wide

Web Direct

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at top of page for more products and latest info!

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The figures quoted are based on a per week basis over 3 years. T.A.P. Terms & Conditions apply.

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NetComm - Networking & Communications Converged

NETWORK INTERFACE ADAPTORS

NP1100 -

High performance auto-sensing 32bit 10/100Mbps Fast Ethernet PCI LAN adaptor featuring Wake-On-LAN function.

(C7657) **\$29**

NP1200 -

10/100Mbps Fast Ethernet 32bit PC Card with TruConnect technology, direct LAN connection, no dongle required.

(D1166) **\$99**

NP1010 -

USB LAN Key 10/100Mbps Fast Ethernet adaptor connects PC's to LAN via a USB port with no need to reboot.

(C7651) **\$88**

NP1300 -

Compact Flash 10Base-T Ethernet adaptor for PDA's and Notebooks includes PCMCIA adaptor.

(D4201) **\$139**



MAY

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**HARRIS
TECHNOLOGY™**

High Performance Data/Fax Modem



Socket Rocket

The NetComm Socket Rocket PCMCIA offers the features of a high-speed desktop modem in a small credit-card sized package ideal for portable computing. The NetComm Socket Rocket delivers the fastest data and modem speeds available today.

- Efficient – MNP4 & 5 technology onboard means faster data throughput
- Internet – Capable of super-fast connections up to 56K
- Ease Of Use – Literally Plug 'n' Play

(E4401) **\$195**

Fast Ethernet Switches



NetComm switches deliver high performance 10/100 technology to both large and small networks in a compact affordable package.

NP2005 - 5 Port 10/100Mbps Auto-sensing Network SmartSwitch, Intelligent 'Store & Forward Technology', Durable mini metal case, Plug & Play configuration, external power supply. (D0966) **\$139**

NP2008 - 8 Port 10/100Mbps Auto-sensing Network SmartSwitch, Intelligent 'Store & Forward Technology', Durable mini metal case, Plug & Play configuration, external power supply. (D0967) **\$199**

NP2080 - 8 Port 10/100Mbps Auto-sensing High-Performance Fast Ethernet ProSwitch, Intelligent 'Store & Forward Technology', MDI Uplink Port to cascade additional switches. In-built 240VAC power supply. (D0968) **\$229**

Internet Sharing Gateway



SM4200 - Share Internet the easy way with NetComm's Smart i-Share. Analogue Internet Router with in-built 56K modem, 4-Port ethernet hub, firewall and additional serial port. An all-in-one gateway solution, all configured by your web page. (A8868) **\$454**

Broadband



SM4300 - Internet Router ideal for connection to Cable, DSL, ISDN or Analogue services. With an in-built hardware firewall, the SmartAccess offers secure, Plug & Play Internet sharing for any PC, MAC or Linux network. (C5432) **\$360**

NB1400 - BusinessSmart ADSL Modem / Router

What are you waiting for? BusinessSmart opens the world of affordable, high-speed Internet access • Eliminate the wait with this Always ON service. • Powerful Ethernet Bridge / Router to share your Internet connection • Use your existing telephone line, keeping installation costs to a minimum. • Easy to install, set-up and use. • Operating system independent

(E5788) **\$489**

Network Attached Storage



NAS-1000 Disk Server Series - Add gigabytes of accessible, fast, hard-disk drive storage to your network, without the cost, space, set-up and maintenance hassles of a fully-fledged file server. Features 20, 40, 60 & 80 Gigabyte models. In-built network print server, 10/100Mbps Fast Ethernet auto-sensing LAN connection. Simple configuration and administration, Full user - share & file level security.

NAS1020 (D0848) **\$1,299**
NAS1060 (D0850) **\$2,199**

NAS1040 (D0849) **\$1,749**
NAS1080 (D0851) **\$2,550**

Notebook Back Pack Promo & Security

FREE* CD Case with every Targus RAKGear Notebook Back Pack!



(E5768)

\$89

**BONUS
FREE*
CD CASE**



The CD Projects
24CD Steel Case

Features:

- Velvet lining
- Snap shut closure
- BubbleSleeves™

*Offer valid from 1st April till 29 June. While stocks last!

NEW

SECURITY at the touch of a finger!

Targus Defcon Authenticator



Ultimate data protection is now literally at your finger tips.

Defcon Authenticators use fingerprint biometrics instead of conventional password access, providing you with a security system that cannot be broken into, decoded, guessed at, lost or stolen. They also ensure that all authorised users of sensitive data can be verified with complete certainty. The Defcon PA460U pod with built-in two-port USB Hub can be used for both desktops and notebooks, while the slimline Defcon PA470U PC Card is ideal for personal notebooks.

For more information or corporate solution enquiries, call 1300 13 9999 or email info@ht.com.au



notebook not included

\$277

(C5313)

Other Security products available from Targus!

Defcon™ 3

Remote security system with 94 decibel alarm.



\$109

(C3814)

Defcon™ 1

Anti-theft system that guards your notebook with motion detection



\$99

(66929)

Defcon™ CL

The Targus DEFCON CL Cable Lock with cut-resistant, galvanised steel cable



\$65

(81511)

TARGUS
Essential Accessories for Mobile Computing

Camera Cases

Pro Black Video Case



(D6172) **\$65**

Pro Black Camera Case



(D6169) **\$32**

Sport Camera Case



(D6173) **\$32**

Sport Video Case



(D6174) **\$55**



**HARRIS
TECHNOLOGY.**
for all your
computer
needs!

MAY
29



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*The figures quoted are based on a per week basis over 3 years. T.A.P. Terms & Conditions apply.

Prices are subject to change. Check here for latest prices & products!

Web Direct

www.ht.com.au/cat/verbatim

Digital Memory & Readers

Verbatim

NEW Products

CompactFlash Modem



Add full 56k modem capabilities to your PalmTop or handheld Windows CE device. Includes CompactFlash to PC Card Adapter.

(E5560) **\$264**

CompactFlash LAN Card



This Ethernet CompactFlash card brings high speed networking to your mobile devices.

(E5562) **\$230**

CompactFlash GPS Card



The world's smallest GPS (Global Positioning System) in CompactFlash package.

(E5563) **\$660**



CompactFlash



With CompactFlash Digital Film you can increase the storage capacity of any compatible digital camera or PDA.

16MB CompactFlash (B2920)	\$43
32MB CompactFlash (B2921)	\$59
64MB CompactFlash (B2922)	\$89
96MB CompactFlash (D9286)	\$119
128MB CompactFlash (B2923)	\$155
256MB CompactFlash (C0777)	\$313
512MB CompactFlash (E1225)	\$813

NEW



MultiMedia Cards



MultiMediaCard is the world's smallest removable flash storage card! Suitable for MP3 players, Mobile phones and Digital Video Cameras.

16MB MultiMediaCard (B9871)	\$59
32MB MultiMediaCard (B9873)	\$88
64MB MultiMediaCard (B9878)	\$153



SmartMedia



SmartMedia cards expand the storage capacity of any compatible digital camera. Suitable for digital cameras from Olympus, Fuji and others.

16MB SmartMedia (B2915)	\$29
32MB SmartMedia (B2916)	\$49
64MB SmartMedia (B2917)	\$93
128MB SmartMedia (C3680)	\$187



SecureDigital Cards



SecureDigital media features faster data transfer rates and the ability to manually write-protect data.

16MB SecureDigital (D4115)	\$68
32MB SecureDigital (D4116)	\$108
64MB SecureDigital (D4117)	\$175
128MB SecureDigital NEW (D5918)	\$352

Memory Card Adapters



SDMCA

SDMCA PC Card 4-in-1 Card Adapter (D4139) **\$119**

CFCA PC Card CompactFlash Card Adapter (C2422) **\$22**

CFCAP PC Card Compact Flash+ Card Adapter (D4147) **\$33**

SMCA PC Card SmartMedia Card Adapter (B2918) **\$99**

USB Digital Memory Readers



UISDMC1

Exchange data between your PC, laptop, MP3 player or Digital Camera.

UISDMC1 USB 4-in-1 Socket + Compact Flash Card Drive (D4155) **\$164**

UISC3 USB SmartMedia and CompactFlash Card Drive (B2926) **\$77**



4-in-1 Readers

4-in-1 readers have a unique single socket which will take Secure Digital Card, MultiMediaCard, Memory Stick and SmartMedia.

FireWire Digital Memory Readers



POCFFW
POSMFW
MIMKFW

FireWire CompactFlash Card Drive (D4161)	\$105
FireWire SmartMedia Card Drive (D4162)	\$127
FireWire Memory Stick Card Drive (D4163)	\$138

MAY

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RENTSMART

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Prices are subject to change. Check here for latest prices & products!!

Web Direct

www.ht.com.au/cat/verbatim

Copying and Connectivity

Verbatim

**BONUS
FREE*CD's**

16x only
*refer to side panel for redemption details

**100
FREE*DISCS**

CopySmart CD Copiers

Copy discs with a single button press.
Standalone - no PC required.
Available with 1, 3 or 7 recording drives

CopySmart 16x* (B9843) **\$1,320**
Rent* \$14.46/wk

NEW **CopySmart Plus 1-3 24x** (E3503) **\$2,167**
Rent* \$23.75/wk

NEW **CopySmart Plus 1-7 24x** (E3504) **\$4,232**
Rent* \$39.55/wk

***ON
REDEMPTION**

Bonus CD's sent after registration of goods: registration form in boxes. Only available while stocks last.

FireWire for Notebook



Adds two FireWire ports to your Notebook with a Cardbus Type II interface.

- Plug and Play!
- Free video capture and editing software.

FireWire to CardBus controller (2 port)

(B9849) **\$109**

USB 2.0



Introducing USB 2.0. Faster than FireWire. Compatible with existing USB peripherals.

5 port Card (B9850)

\$105

4 port Hub (B9851)

\$109

KOUWELL

PCI Firewire Cards



Connect your digital video camera to your PC. Download and edit your own movies.



NEW product

PCI Firewire/USB 2.0 Combo Card (E0000) **\$183**

PCI Firewire Card - 4 ports (90689) **\$98**

PCI Firewire Card - 6 ports (A5161) **\$115**

6 pin to 6 pin Firewire cable (B2905) **\$13**

KOUWELL

USB Hubs & Cards



USB Hub - 6 ports (79702) **\$65**

PCI USB Card - 2 ports (84801) **\$29**

USB Network Cable (B2908) **\$60**

USB to Printer Cable (84803) **\$33**

Internal 3.5" USB Hub - 4 ports (B2909) **\$49**

USB to 10/100 Ethernet Adapter (B2912) **\$88**

KOUWELL

PCI SCSI Cards



**NEW
160MB
Card**

The easy way to expand your PC. Connect multiple SCSI devices to one card.

PCI Bus, Ultra-SCSI (90681) **\$69**

PCI Bus, Ultra-Wide (90683) **\$154**

PCI Bus, 2 channel Ultra-Wide (90684) **\$340**

PCI Bus, Ultra2-Wide (90685) **\$245**

PCI Bus, Ultra 160 (90847) **\$438**

KOUWELL

IDE Acceleration & ExpansionCard



Speed up your PC's new hard disk drives with this PCI plug in Ultra DMA 100 card.

Supports transfer speeds of up to 100MB/s with new ATA100 drives, and includes the ability to run up to 4 extra IDE or ATAPI drives on your system.

PCI IDE Ultra DMA 100 Card (90688) **\$60**

PCI IDE Ultra DMA 100 RAID Card (B8410) **\$88**



PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999

Web: www.ht.com.au

Fax: 1300 13 6666

Email: sales@ht.com.au

HARRIS Technology Centre
at Kmart Broadway-Sydney

MAY
31

CD / DVD Production Equipment

PRIMERA
TECHNOLOGY INC.

Signature IV CD Printer



- 1200x1200 dpi res
- Fast: 27 seconds per disc.

 (B9917) **\$3,298**

Rent* \$32.34/wk

 See page 33
for Inkjet Printable Discs

PRIMERA
TECHNOLOGY INC.

Signature Pro CD Printer



- 2400dpi
- Superfast
- Dual Ink Cartridges

 (C3681) **\$4,069**

Rent* \$38.02/wk

 See page 33
for Inkjet Printable Discs

PRIMERA
TECHNOLOGY INC.

Inscripta Printer



- 610 x 305 dpi Thermal
- Durable finish

 (B2932) **\$5,499**

Rent* \$50.12/wk

 See page 33
for Thermal Printable Discs

Composer Family


PRIMERA
TECHNOLOGY INC.

NOW 24x

- Premastering software Included
- optional inkjet printer shown

1 x CD-R

Composer CD-R 24x, 50 disc

 Rent* \$49.54/wk (D5895) **\$5,435**

1 x DVD-R

Composer DVD-R 2x/8x, 50 disc

 Rent* \$72.53/wk (C5561) **\$8,359**

2 x CD-R

ComposerPro CD-R 24x, 100 disc

 Rent* \$72.66/wk (D5896) **\$8,375**

2 x DVD-R

ComposerPro DVD-R 2x/8x, 100 disc

 Rent* \$107.27/wk (D4190) **\$13,095**

4 x CD-R **NEW**

ComposerMAX CD-R 24x, 400 disc

 Rent* \$140.49/wk (E5594) **\$17,395**

4 x DVD-R **NEW**

ComposerMAX DVD-R 24x, 400 disc

 Rent* \$223.72/wk (E5596) **\$27,699**

Add a printer!

Add a printer from those shown at left and an adapter plate to upgrade your Composer / Composer Pro to a full burn and print solution.

Printer Stand for

Inscripta Printer

 (B8878) **\$99**

Printer Stand for

Signature III/IV/Pro Printer

 (C1748) **\$99**


Desktop Series



R I M A G E™

**Network
Burning**
**Includes
Printer**


1 x CD-R

Desktop 800 24x, 60 Disc

 Rent* \$85.81/wk (D4141) **\$10,050**

1 x DVD-R

Desktop 800 2x/8x, 60 Disc

 Rent* \$97.11/wk (D4148) **\$11,854**

2 x CD-R

Desktop 1000 24x, 50 disc

 Rent* \$138.19/wk (D4143) **\$17,110**

Desktop 1000 2x/8x, 50 disc

(optional 110 disc)

 Rent* \$168.16/wk (D4144) **\$20,820**

2 x DVD-R

Desktop 1000 2x/8x, 50 disc

 Rent* \$164.84/wk (D4151) **\$20,409**

Desktop 4000 2x/8x, 50 disc

(optional 110 disc)

 Rent* \$191.47/wk (D4152) **\$23,707**

4 x CD-R

Desktop 4000 24x, 50 disc

 Rent* \$179.82/wk (D4145) **\$22,264**

4 x DVD-R

Desktop 4000 2x/8x, 50 disc

 Rent* \$226.44/wk (D4154) **\$28,036**

MAY

32

CD-R/CD-RW & DVD-R/DVD-RW: Storage for life

DataLifePlus CD-R - 24x



super
AZO

80 Min.
700MB
1x - 24x
10 Pack

(D4114) **\$13**

80 Min.
1x - 24x Singles
(D5933) **\$2**

DataLifePlus CD-R Audio



80 Min.
10 pack
(C7889) **\$18**

80 Min.
Singles
(D0011) **\$2**

Verbatim DVD Media

DVD-R



4.7 GB DVD-R for
General Data - Singles

(C8840) **\$13**

DVD-RW



4.7 GB DVD-RW
(version 1.1)
- Singles

(C8841) **\$17**

DVD+RW



4.7GB DVD+RW
- Singles

(D9166) **\$17**

DataLife Neons



Neon
Coloured
floppy disks
for easy
filing.

(C9753) **\$9**

Pocket Colours 8cm CD-R



NEW

Mini CD's that fit in your pocket!

- Store up to 3 hours of MP3's or up to 185MB of pictures, files or any data you like.

21min 185MB 1x - 16x,
5 Pack

(D9192) **\$9**

- Compatible with any standard tray based CD player or burner

21min 185MB 1x - 16x,
10 Pack

(C9459) **\$17**

Printable CD-R Media



In Spindles of 50

Printable 74 min
(D5013) **\$53**

White Thermal Printable
74 min 12x
(D5963) **\$53**

Silver Thermal Printable
80 min 16x
(D0562) **\$53**

See page 32 for CD Printers.

DataLifePlus Colours CD-R



80 Min. 700MB 1x - 24x
coloured CD-R's
in a 25 pack

(B1355) **\$30**

80 Min. 700MB 1x - 24x
coloured CD-R's
in a 10 pack

(D9227) **\$13**

DataLife CD-R

- Third generation Phthalocyanine Recording Dye Technology
- Scratch Resistant Surface

80 Minute DataLife
SlimCase 10
pack 16x (C7091) **\$12**

80 Minute DataLife Spindle
25 pack 16x
(C7093) **\$25**

DataLifePlus CD-RW

700MB CD Rewritable 2x-4x
5 Pack Colours

(D9230) **\$9**



2x - 4x Singles
(77492) **\$2**

4x - 10x Singles
(B2658) **\$3**

Verbatim DataLifePlus CD's represent the latest in technology. Featuring a proprietary blue Metal-Azo dye which has the best resistance to sunlight, silver reflective layer for optimum read and write performance and multispeed recording.

Did you
know...



Multimedia: DVD & Blank Media

Pioneer

DVD-R
MEDIA



• Jewel Case
• Memory-capacity of 4.7GB • Suitable for DVD Video & Data backup • Playable on both DVD-Video players & DVD-ROM drives • Commercial and Home DVD-Video production • Large sized data archive storage (not for use with Pioneer DVR-S201 authoring drive)

DVS-R47A
(DVD-R)

(E3852)

\$15

DVS-
RP470SDF

• White printable version

(C2322)

\$18

DVD-RW
MEDIA



Rewritable DVD media Jewel case Memory capacity of 4.7GB: Suitable for DVD video & data: (not for use with Pioneer DVR-S201 authoring drive)

DVS-RW47B
(DVD-RW)

(D9300)

\$24

Pioneer

DVR-A04 DVD-R/RW Writer



NEW

FEATURES:

Writes: DVD-R (2x)

DVD-RW (1x)

CD-R (8x)

CD-RW (4x)

Reads: DVD-ROM, DVD-Video, DVD-R, DVD-RW, CD-ROM, CD-R, CD-RW, CD-TEXT, Photo CD, Audio CD

Lower noise & vibration, smaller chassis and vertical mounting.

Pioneer's multi award winning DVD-R/RW drive is now even better with the release of the 4th generation at new lower pricing. It offers higher reading speeds, improved bundled software and is available in 3 upgrade kits.

INCLUDES:

- Veritas RecordNow & DLA for data
- ArcSoft ShowBiz for video editing including MPEG2 encoding function
- PowerDVD XP 4.0 for DVD movie playback
- Sonic MyDVD for authoring
- 5 x Blockbuster Video DVD movie rental vouchers
- 1 x DVD-R media
- 1 x DVD-RW media
- Permanent pen

DVR-A04FW – includes all of the above plus firewire card, cable and DVDit! PE authoring software including MPEG2 encoder.

DVR-A04PRO – includes all of the above plus ReelDVD professional authoring software (not including firewire card & cable)



Includes: 5 x DVD movie rental vouchers from Blockbuster Video (included inside product box - see voucher for conditions and expiry dates)

DVR-A04 (E3676)

\$1,099

DVR-A04FW (E3679)

\$1,399

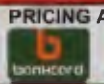
DVR-A04PRO (E3681)

\$1,945

MAY

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TECHNOLOGY™**



FINANCE METHODS
ARE SUBJECT TO
APPROVAL

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Smart Storage Solutions

Zip 100 USB Powered

An affordable total storage solution as easy to use, but far superior to, the floppy drive. Iomega's Zip® 100MB USB-Powered drive is affordable, reliable, easy to use and has a sleek, durable design powered through the USB cable for complete plug-and-play compatibility.


 (D0587) **\$185**

Peerless 10GB Storage

The next generation in high-capacity removable storage. Iomega's Peerless™ drive system offers 10GB and 20GB disks, interchangeable interfaces, and 15MB/sec transfer rates for stunning performance. Firewire® and USB 1.1 interfaces available.



USB 1.1 10GB

*Rent: \$8.71/wk

 (C3525) **\$795**

 Zip 100MB disk
(23772)

\$25

 10-pack:
(21889)

\$189

 Zip drive carry case
(31823)

\$49

 Zip disk 250Mb
(74454)

\$29

 Zip disk 250Mb 10 Pack
(74452)

\$249

 Jaz 1 GB disk
(32844)

\$569

 Jaz 2 GB disk
(57271)

\$615

Predator

Iomega Predator 24x10x40CD-RW drive

The all new and exciting Iomega CDRW drive. An external 24x10x40 CDRW with USB 2.0 capability offers you blazing speed performance in terms of write speeds including a BURNPROOF feature to eliminate wasted CDs. The drive has one of the most unique designs with its sleek, slim and stylish architecture. Now included, the Iomega Hotburn Software for effortless 2 step CD creation.


 (D9194) **\$549**

Iomega CD-RW CD-RW Drive

USB 2.0 capability gives Iomega's new external CD-RW drive amazing 16x10x40x performance with PCs that support the USB 2.0 standard. Also fully backward compatible with USB 1.1, providing near-universal connectivity with Mac and PC computers and 4x4x6x performance. Includes Buffer Under-run protection and NEW Iomega HotBurn CD creation software.


 (D4043) **\$499**

Host Powered 250 USB

NEW – Host-powered

Zip® 250MB USB

drive Now it's even easier to take your information with you. The Zip® 250 USB drive is now

available with a USB cable that provides both data and power, so you don't need any external power source. Its easy to connect (just plug it in) and easy to launch (no rebooting)! This new drive is compatible with most major operating systems and all Zip 100MB and 250MB Zip disks.


 (B6404) **\$327**

Ask About...



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site



CD-R/W & Caching Towers

Now you can collect Fly Buys points when you purchase from **HARRIS TECHNOLOGY.**



PLEXTOR® PlexWriter
40/12/40A E-IDE
\$509
(E3830)

**High speed – High Quality – New writing strategy
– POWEREC II High Reliability – Save your disc – BURN Proof.**

The PlexWriter 40/12/40A E-IDE (ATAPI) drive, with built-in BURN-Proof technology, delivers exceptionally fast performance in a professional 3-in-1 CD solution, while upholding the legendary Plextor reliability.

How does PowerRec-II function?

PowerRec-II checks the quality of a disc in order to set up the appropriate writing speed and optimised laser power for the disc.

This technology promises, in Zone CLV, excellent writing in each area of the disc. The PlexWriter records CD-R discs at 40X speed, rewrites CD-RWs at 12X, and reads back all CDs at 40 speed.

BURN Proof (Buffer Under Run - Proof) enables you to stop writing before buffer under run errors occur and then to continue writing by tying last point of recording and the next start point ... no more drink coasters. These drives are the best of the best. Comes with software, cables, manuals, ready for installation.

Wine on-line?



vintagecellars.com.au

PLEXTOR® Portable For Notebooks & PC's 8/8/24 USB

It's the first-ever portable slim CD-R/W drive from Plextor with 8 Speed writing and 8 Speed rewriting by full CLV technology with "BURN-Proof" and 24 speed reliable reading. The PX-88TU features USB 2.0 interface (maximum transfer rate of 480Mbps). The PX-88TU's unique see-through window enables easy identification of the disc inside the drive for both 12 and 8cm discs. All Plextor drives are supplied with:



- MVP 2000 Create a digital jukebox and customized play lists, Record audio CDs from the play list on CDR, Automated internet access to the CDDB database supplies album, song and artist information.
- Audio FS – allows for Drag & Drop access to any CD-Audio track as if they were .WAV files.
- Audio Capture 2000 - Drag & Drop tracks from standard audio CDs
- Plextor Manager 2000 utility software
- Disc Dupe 2000 – Duplicate your own CDs

Rent* \$7.87/wk (D0372) **\$718**

RENT SMART

The figures quoted are based on a per week basis over 3 years. T.A.P. Terms & Conditions apply.

Not all items are in stock at all stores but can be ordered for Pick-up or Delivery*

HARRIS TECHNOLOGY.
*Delivery charges extra

SCRIBE, MediaFORM's latest product entry, provides an affordable desktop CD-R or DVD-R duplication and/or printing solution — all in a single footprint. As the most versatile uplication system on the market today, SCRIBE offers endless possibilities to automate CD-R or DVD-R duplication and/or printing. The base unit serves as a duplicator, print station or as a fully integrated duplication and printing system; allowing you to choose drive and print types within one simple-to-use design — ultimately reducing the overall total cost of ownership.

Choose from three standard system configurations: 1) CD-R, 2) DVD-R, or 3) print station only. Any of the system configurations are designed to accomodate thermal and/or inkjet printers. Plus, the SCRIBE is business card and mini-disc compatible, which further maximises your investment. Not only will the SCRIBE record on business card CD-Rs but it also prints on all media by utilising the SCRIBE Business Card Template Kit.

There's nothing else quite like it! the CD-R version includes MediaFORM's exclusive SmartDRIVE, providing intellectual property safeguards coupled with professional audio features. SCRIBE is the complete CD-R or DVD-R premastering, duplication and/or printing solution, offering you ultimate value and versatility at an economical price.

MediaFORM SMART TECHNOLOGY™



Rent* \$58.99/wk (E3761)

\$6,799 SCRIBE

MAY

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HARRIS TECHNOLOGY™

Surround Yourself With The Very Best

Cordless Presenter™

Bluetooth

NEW!

Cordless controller for presentations. Emphasise your key points with the built-in laser pointer. Move a switch and your presenter becomes a cordless optical mouse. Incorporates Bluetooth technology for exceptional reliability. 5-year warranty.



USB Mini Receiver

(E4364)

\$439

TypeAway™

NEW!

TypeAway is an ultra slim, lightweight folding handheld keyboard. The responsive and comfortable keys enable fast data entry and shortcuts for instant access to your favourite applications. Works with Palm m500, m505, m515, m125 and m130.



PDA not included

(E3567)

\$159

QuickCam® Pro 3000

With its CCD sensor, QuickCam Pro 3000 takes pictures and videos with true 640x480 resolution. Use its built-in microphone to make live video calls over the Internet and send pictures and videos with your emails. QuickCam software lets you easily setup a digital surveillance camera and broadcast live video and audio over the web. Add professional titles, fades and wipes to your videos with the included MGI software. Connection via USB. 2-Year warranty.



(B0805)

\$215

ClickSmart™ 510

Take megapixel pictures and short videos, then share them over the Internet. Includes built-in flash and microphone, QuickSync feature and much more. 2-year warranty



(D5771)

\$325

Logitech® Z560 THX®



NEW!

This surround sound system provides 400W RMS of awesome power. The subwoofer delivers thunderous bass while the revolutionary satellite drivers enhance mid and high-range tones. Exclusive M3D technology for realistic surround sound. 2-year warranty.

(E1270)

\$429

Cordless Freedom™ Optical

The ultimate cordless keyboard and optical mouse. Seamlessly access and navigate the Internet at the touch of a button or the scroll of the iNav wheel.



Intuitive multimedia controls are at your fingertips and allow you to control MP3s, DVDs and CDs from your keyboard.

Every keystroke is made easy with Zero Degree Tilt, offering one of the slimmest keyframes available. The included Cordless MouseMan® Optical will perform perfectly for years to come. 5-year warranty.

(C6106)

\$215

Cordless MouseMan Optical
(C1186)

\$129



MouseMan Traveller
(D4014)

\$109



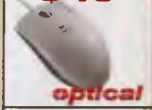
MouseMan Dual Optical
(D4013)

\$79



Optical Mouse
(B9948)

\$45



Internet Navigator
(D0560)

\$63



Deluxe Access 104
(B0819)

\$38



Microsoft®

Prices are subject to change. Check here for latest prices & products!!

Web Direct

www.ht.com.au/cat/microsoft

Keyboard & Mouse Bundle

Microsoft Wheel Mouse Optical and Internet Keyboard Bundle

Microsoft new limited time Value Pack!

Mouse & Keyboard Bundle (E3511)

\$75



Pictured: Microsoft Wheel Mouse Optical and Internet Keyboard Bundle

FLY BUYS
500
BONUS POINTS

Collect 500 Bonus Fly Buys points when you purchase E3511, D0986 or D0990 between 20/04/02 - 31/05/02

MS Office Keyboard

Discover the Microsoft Office Keyboard, you can scroll, move between programs, cut, copy, paste go back and forward the things you do all the time at the touch of a button. The unique, left side Single Touch Pad offers you two handed control and flexibility for a more efficient way to work.



(D0986) **\$79**

FLY BUYS
500
BONUS POINTS

MS Wireless Intellimouse Explorer

Experience the world's most powerful optical technology and wireless freedom in a stylishly unique and comfortable design. IntelliEye® Technology Power Saving Features, Ergonomic Design, Enhanced Grip, 2 Extra Buttons, 5 Customizable Buttons, Faster Wheel Scrolling, USB Connector.



(D0990) **\$139**

FLY BUYS
500
BONUS POINTS

WACOM

Prices are subject to change. Check here for latest prices & products!!

Web Direct

www.ht.com.au/cat/wacom

Intelligent Graphic Tablet System

intuos2



The Intuos2 professional graphics tablet is the latest step forward in the evolution of state-of-the-art input devices for graphics professionals and digital photographers. Intuos2 dramatically improves the performance and feel of working with print and web images & even for the one in every three Photoshop users who are already using a tablet.

*The 6x8 comes with Adobe Photoshop elements, Corel painter classic and Expression2 Lite (vector graphics and animation package)

*Ice Blue (D3282)
*Deep Purple (D3283)

\$625

graphire2

Silver



Sapphire

Graphite

Graphire with its pressure sensitive DuoSwitch pen, 512 levels of pressure gives you the freedom to personalise your work with realistic, hand-drawn sketches and art, or with handwriting and signatures. Flip the pen over and get a pressure sensitive eraser, to delete, soften or feather for special effects.

Silver (D3306)
Graphite (D3307)
Sapphire Blue (D3308)

\$165

HARRIS TECHNOLOGY
Technology Centre at

Officeworks
Chadstone - VIC

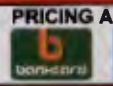
Technology Centre Shoppers! Not all products are in-store, but consulting & advice available on all items.

MAY

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FINANCE METHODS ARE SUBJECT TO APPROVAL

Kodak

Prices are subject to change. Check here for latest prices & products!!

Web
Direct

www.ht.com.au/cat/kodak

Share Moments. Share Life™

Kodak DX4900

The first print-optimized 4.0 MP point & shoot digital camera designed to be one touch simple

- New 3X Advanced Digital Zoom
- 3 Sharpness models (sharp, standard, soft)
- High Speed Sequence shooting up to 3FPS(Burst)
- Flash modes (auto, fill, red-eye, off)
- ISO settings (auto 100-400 or selectable 100,200,400)
- White Balance modes (Auto, Daylight, Tungsten, Fluorescent)
- Shutter Speed Controls Auto (1/2000 sec to 16 seconds)...

(E3471) **\$1,199**



Kodak PICTURE CARDS

32MB Picture Card (62677)

\$65

64MB Picture Card (82249)

\$99

128MB Picture Card (A5253)

\$180

Kodak DX3700

Great pictures made easy.

EasyShare DX3700 Digital Camera. It has 3.1 MP resolution for excellent picture quality up to 11" x 14". Getting closer to the fun is easy with the 3x digital zoom.

- 3.1MP resolution
- 3x digital zoom!
- 8MB internal memory
- Compatible with the Kodak EasyShareCamera Dock

(D0792) **\$713**



Kodak DX3215

Making digital easy- one picture at a time.

Great pictures made easy
Want to get into digital with ease?

You've found your camera.

Introducing the KODAK

EasyShare DX3215. This

camera gets you started with 1.3MP resolution for great prints

up to 5" x 7". A 4X zoom (2X optical and 2X digital) lets you get closer

to the fun. It's the perfect camera to get you into digital picture-taking. • 1.3MP resolution • One-touch picture transfer • 8MB internal memory (C9539)



\$449

Kodak DX3900

The high-performance camera.

Set your own color mode, ISO, and lighting exposure settings to get your perfect picture. Thanks to 3.1MP resolution, you'll get excellent picture quality on prints up to 11" x 14".

The DX3900 comes with 6X zoom

(2X optical and 3X digital) and a

COMPACTFLASH Card to keep you

shooting longer. • CCD resolution • image

resolution 3.1 megapixel 2160x1440 pixels

• burst maximum 8 pictures at 0.8MP resolution

• lens 35 mm - 70 mm, (35 mm equiv.) • auto focus

• zoom 6x (2x optical, 3x digital)

(C7689) **\$1,069**



Kodak DX3600

Easy share dock system

KODAK DX3600 Digital Camera

with Kodak easy share dock

system. Get crisp, vibrant prints up

to 8" x 10" thanks to its 2.2MP

resolution and 3X digital zoom.

Start shooting right away with

8MB of internal memory. The

DX3600 comes equipped with a

COMPACTFLASH Card expansion

slot so you can boost your camera's

memory capacity

Recording time only limited by the

size of the compact flash being used.



(C5964) **\$779**

Kodak DX3500

Simple-to-use

KODAK DX3500 Digital Camera

Get

crisp, vibrant prints thanks to its 2.2MP

resolution and 3X digital zoom. The

DX3500 comes equipped with a

COMPACTFLASH Card expansion slot

so you can boost it's memory capacity.

• KODAK Picture Software lets you instantly

view, edit, e-mail, and print your pictures.

• Get great-looking prints with 2.2MP

resolution and 3X digital zoom.

(C9587) **\$549**



Kodak MC3 portable media device

All the multimedia you've ever wanted in one little player

Click into digital video mode to shoot funny movies

or snap a few digital pictures. Download your

favorite MP3s and take them with you, listening via

ear buds or through your boom box or car stereo.

It's one of the only MP3 players with a reflective

colour preview screen, so you can use it even in

bright sunlight. Transferring to your PC is a breeze.

It even lets you combine your pictures, music and

video into unique music videos.



(B9818) **\$349**

Kodak Good quality camera's need good quality papers

Kodak
Ultara
Picture Paper

ultra glossy 15 sheets
(B1656)

\$14

Kodak
Picture Paper

Satin 15 sheets
(D3251)

\$14

Kodak
Picture Paper

Semi gloss 75 sheets
(D3258)

\$35

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Extraordinary Digital

Coolpix Cameras

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Coolpix 5000

Nikon Coolpix 5000 compact, magnesium-alloy body, featuring large 2/3 inch type CCD, variable LCD and movie with sound.

- Top-of-the-line Coolpix model.
- 5.0 effective megapixel resolution.
- Lens equivalent to 28-85mm in 35mm format camera.
- Rechargeable Li-ion battery (life 100 minutes of use)
- Compact and lightweight magnesium alloy body.
- Rapid response startup and shooting



Rent* \$23.00/wk
\$2,099
(E2199)

Coolpix 995

Rechargeable Li-ion Battery.

Flexibility, plus a substantial list of innovative features; superior 4x Zoom lens...

- 3.20 effective pixels CCD
- Unique swivel design allows for a wider range of shooting angles.
- Quick Review function.
- Rechargeable battery and charger included.
- Wide range of converter lenses and accessories available



Rent* \$16.97/wk
\$1,549
(E2198)

Coolpix 885

A compact and lightweight 3-Megapixel digital still camera. Features include superior image and ease-of-use, new Small Picture function for easy emails.

- From beginners to advanced amateurs
- Lens equivalent to 38-114mm in 35mm format
- 12 Scene Modes and quick review
- One button easy transfer



Rechargeable
Li-ion Battery.

Rent* \$14.63/wk (E2196) **\$1,335**

Coolpix 775

For users of any age or lifestyle, a friendly and uncomplicated camera, turning moments into memories. Transfer button automatically copies pictures from the camera to the computer, ready for saving.

- High-resolution 2.01-effective megapixel CCD.
- Lens equivalent to 38-115mm in 35mm camera format.
- 7 scene modes and quick review



Rechargeable
Li-ion Battery.

Rent* \$9.85/wk (E2195) **\$899**

Coolpix 2500

- Style with a twist
- 2.0 Million effective pixels
- 3 x optical zoom with digital zoom up to 4x.
- 12 Scene Modes
- Small Picture mode for easy emails
- One button transfer
- Quick review function

Rechargeable
Li-ion Battery.



(E5781) **\$Call**

Coolpix System Accessories

Accessories fit 775, 885, 995, 5000 with dedicated Adapter Ring

ES-EC28 SLIDE COPYING ADAPTER

- Compatible with Coolpix cameras 880, 885, 990, 995 and 5000
- Or Cameras with Macro setting capability as close as 4cm (1.6 in.) from a subject.
- Makes digital images from positive/negative film, film with a mount or film sleeve



(E2181) **\$139**

TELEPHOTO CONVERTER TC-E3 ED

- Triples focal length of the camera's lens
- 6 elements in 3 groups
- Two Extra-low Dispersion (ED) glass elements employed
- Dimensions (approx.): ø75mm x 78.6mm (ø2.95 in. x 3.09 in.)



(E2192) **\$519**

TELEPHOTO CONVERTER TC-E2

- Doubles focal length of the camera's lens
- 4 elements in 3 groups
- Dimensions (approx.): ø65mm x 45mm (ø1.95 in. x 0.98 in.)
- Weight (approx.): 150g (5.25 oz.)



(E2190) **\$259**

WIDE ANGLE CONVERTER WC-E24

- Focal length of the camera's lens reduced to x0.66
- 2 elements in 2 groups
- Dimensions (approx.): ø49.5mm x 25mm (ø1.98 in. x 1 in.)
- Weight (approx.): 65g (2.275 oz.)



(E2185) **\$173**

WIDE ANGLE CONVERTER WC-E63

- Focal length of the camera's lens reduced to x0.63
- 4 elements in 4 groups
- Low-Distortion design
- Dimensions (approx.): ø75mm x 33.8mm (ø2.95 in. x 1.33 in.)
- Weight (approx.): 150g (5.29 oz.)



(E2189) **\$249**

FISHEYE CONVERTER FC-E8

- Focal length of the camera's lens reduced to x0.21
- Provides approx. 183° view angle
- 5 elements in 4 groups
- Dimensions (approx.): ø74mm x 50mm (ø2.96 in. x 2 in.)
- Weight (approx.): 205g (7.32 oz.)



Rent* \$6.09/wk (E2193) **\$556**

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High-breed Monitors

SyncMaster 151s 15" LCD monitor

**Specifications:**

- 15" viewable screen resolution XGA(1024 x 768)
- Colours 16.2M
- H.Frequency 30 ~ 61 kHz
- V.Frequency 50 ~ 75 Hz
- Contrast 330:1

- Luminance 250cd/m2
- Viewing Angle 140°/120°
- Input connectors 15pin D-Sub
- Sync Type Composite H/V, SOG
- Power 30W(Max.)

While Stocks Last !

Optional Pivot to Portrait*

Rent* \$9.30/wk Ivory (D3614) **\$849**

*the head of the monitor can be turned to provide either a portrait or landscape picture.

SyncMaster 151BM 15" Multimedia LCD monitor

**Specifications:**

- 15" Viewable LCD Monitor
- 1024 x 768 max resolution @ 76Hz
- 140°/120° viewing angle.
- Fast and accurate auto adjustment
- NUTEK Certified

- Three colour choices: silver/black/ivory
- Pivot technology
- Built in Multimedia Speakers
- Optional USB-Hub available
- Weight 4.1kg

Optional Pivot to Portrait*

Rent* \$11.71/wk (D6237) **\$1,069**

SyncMaster 171s 17" LCD Monitor



The SyncMaster171S is the ideal display for all business and professional applications. Its new slim design refined with Samsung's digital technology allows the product to fit all working environments. Optional Pivot stand enables a rotating feature by which you can see one full page of an A4 document without scrolling. The SyncMaster171S is power efficient as well. It consumes less than 1 Watt of power in power off mode, and its built-in power adaptor lets you free from a dangling power brick, leaving your desk clean and simple.

Rent* \$19.84/wk (D9313) **\$1,810**

SyncMaster 753DFX 17" CRT Monitor

**SOHO Series Features:****Specifications:**

- 17"(16" Viewable)
- 0.20mm dot pitch (horizontal)
- 1280 x 1024 @ 66Hz Maximum Resolution
- DynaFlat - Infinitely Flat Tube
- Smart III surface treatment (anti-static & anti-glare)

- On Screen Digital Display
- Plug & Play Compatibility
- MPR-II/NUTEK certified

(C1283) **\$449**

SyncMaster 955df 19" CRT Monitor

**Graphix Pro Series Features:****Specifications:**

- Model No.: 955df 19" (18" Viewable)
- 0.20mm dot pitch (Horizontal)
- 1600 x 1200 @68Hz Maximum Resolution
- DYNA Flat - Infinitely Flat Tube

- Smart III Surface Treatment (Anti-Static & Anti-Glare)
- Onscreen Digital Display
- MPR-II/NUTEK Certified
- Plug & Play Capability

Rent* \$9.04/wk (C3975) **\$825****Ask
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☐ Extend to a total of 5 Years Return to Base

☐ Upgrade Return to Base of Warranty Extension to On-Site
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on-line?****RENTSMART**

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available on all items.



295LM 22" LCD

- 22" Monitor (Viewable Screen Size 56cm) TFT LCD
- Resolution:1600 x 1200 @75Hz (Analog)
- Brightness: 180cd/m2 (Typical)
- Contrast Ratio: 300/1 (Typical)
- Video Signal Type: Separate, Digital Signal
- Input Connector: 15pin D-Sub, DVI-D, S-VHS,RCA
- Detachable Stereo Speakers
- 3 USB Ports, DDC 2B
- Weight: 18.0Kg (With Speaker)

(D611)

\$7,499

*Rent: \$65.06/wk

575LE 15" LCD



- 15" LCD Flatron Monitor •Res: 1024x768 @75Hz •Brightness: 250 cd/m2 (Typical)
- Contrast Ratio: 300:1 •Video Signal Type: RGB analog, Separate H/V •Plug & Play: DDC 2B
- OCD Control •TCO-99, TUV-GS, VCCI, Energy Star, GOST CE Compliant •Weight: 5.1kg (Net)

(D3281)

\$997

*Rent: \$10.92/wk

575LM 15" LCD MM



- Multimedia •15.1" (38.35cm) Screen •Pixel Pitch 0.3*0.3mm •Pixel Format: RGB Vertical Stripe Arrangement •Anti-Glare, Hard Coating Surface Treatment •Screen Brightness: 200cd/m2 (Typ) •Contrast Ratio: 200:1 (Typ) •Max Res: 1024*1768@85Hz •Weight: 5.1kg

(E0767)

\$1,149

*Rent: \$12.59/wk

885LE 18" LCD



- 18.1" LCD screen •0.28*0.28mm Pixel Pitch
- Max Res 1280*1024 @ 75Hz
- Brightness 170cd/m (Typ) •Contrast Ratio 200:1
- Viewing Angle 160 Degrees Horizontal, 160 Degrees vertical
- Digital soft touch OSD keys, -TCO 99 Certified

(D3288)

\$2,939

*Rent: \$28.82/wk

SW700S 17" CRT

- 17"CRT •27mm dot pitch •1280 x 1024 @ 60Hz •invar mask •Anti-static, anti-glare, anti-reflection •Dynamic focus

(E1238)

\$399



SW57M 15" CRT MM

- Integrated stereo amplifier and speakers
- Multi-synchronous support from 640x480 up to 1280x1024 •Flicker-free 1024x768 non-interlaced at 75Hz •MS Windows 95 PnP, VESA compliant.

(42879)

\$375



DRIVES



24x10x40 CDRW

- 8MB buffer with under-run technology

(E1961) **\$209**

CDRW/ DVD Combo

- 12x8x32x8DVD •2MB buffer with under-run technology

(E0772) **\$319**

LG 16x DVD

- with power DVD software

(E0770) **\$169**

775FT FLATRON

- Triple Flat screen •Viewable Screen Size 16.01" •Pixel Pitch 0.24mm •Flat Tension Mask
- Anti Glare •Dynamic Focus
- Max Res: 1280x1024 @ 60Hz
- Plug & Play: DDC 2B •Weight: 17,8Kg (Net) •Dampening Wire Free

(E0764)

\$469



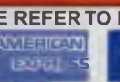
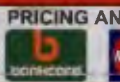
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hp LaserJet & Inkjet business printers

hp LaserJet 3300 & 3330

full-featured multi-function printer

- up to 14 ppm (A4 size) • compact size to save office space • the HP Ultra Precise print cartridges print more than 2,500 pages each optional high capacity cartridge print up to 3,500 pages • duty cycle of 10,000 pages-per-month • one-year warranty • digital copying 14 cpm 600 x 600 dpi • flatbed scanner scans up to 216x381, 600 ppi colour • 90 MHz mm • 3330mfp-32 MB Ram • 3300mfp-16 MB Ram



NEW

hp LaserJet 3300mfp

digital printer-copier Rent* \$12.81/wk

(E3828) **\$1,169**

hp LaserJet 3330mfp

printer-fax-copier-scan Rent* \$16.99/wk

(E3864) **\$1,550**

hp LaserJet 4100mfp Series

Intelligent multi-function printer

- print, copy, colour scan to email and digital send in one machine, the multi-function printer saves costs and office space • prints at 24 ppm (A4) with first page out in less than 12 seconds • the 250 MHz processor, 64 MB RAM and 5.1 GB hard disk enable fast processing of large files and print jobs • scan resolution up to 600 ppi • Walk-up copying is easy and simple • HP print cartridge and software work hand-in-hand to allow users to monitor and order supplies, hence ensuring uninterrupted printing, consistent output quality and efficient workflow.



NEW

hp LaserJet 4100mfp

Rent* \$75.98/wk (E3829) **\$8,899^{RRP}**

hp business Inkjet 2600 Series

wide-format (A3+) colour network printer

- up to 15 ppm (black & white) and 11 ppm (colour) in fast 11ppm (colour) A4 • complex graphic documents easily handled with power of dual processors (167/160 MHz) and 48 MB of printer memory (upgradable to 176 MB) • wide-format (A3+) high quality printing - up to 1200 x 600 dpi, HP PhotoRet 3 colour layering technology.



NEW inkjet

hp business Inkjet 2600

Rent* \$26.72/wk (E3874) **\$2,725^{RRP}**

hp business Inkjet 2600dn

(network duplex) Rent* \$37.22/wk (E3875) **\$3,795^{RRP}**

hp LaserJet 1200 Series

hp LaserJet 1200n-16MB

Rent* \$14.19/wk (B9958) **\$1,295**

hp LaserJet 1200

Rent* \$8.60/wk (B9799) **\$785**

- 14 ppm A4 (best-in-class) and first page out in less than 10 seconds • increased memory of 8MB of RAM (upgradable to 72 MB) • protected 250-sheet input tray and 10-sheet priority feed tray • 10,000 pages monthly duty cycle • instant-on-fuser eliminates warm up time.



hp LaserJet 1220 scan/copy

Rent* \$10.13/wk (B9968) **\$925**

Enjoy the comfort of printing, colour scanning and copying from one machine with the copier/scanner attachment for your hp LaserJet 1200.

hp LaserJet 8550 Series

Get ahead with professional in-house printing

With its advanced features and exceptional performance, your productivity will be dramatically increased. The industry standard for departmental network colour printing, this top-of-the-line printer offers a complete network printing solution that grows with your business. • paper sizes (up to A3) • 60,000 page duty cycle and 24 ppm • print on both sides of the page with the optional duplex unit (standard on 8550dn & gn).

hp LaserJet 8550 Rent* \$72.87/wk (98869) **\$8,399**hp LaserJet 8550n Rent* \$86.22/wk (98870) **\$10,099**hp LaserJet 8550dn Rent* \$104.85/wk (98871) **\$12,799**hp LaserJet 8550gn Rent* \$122.87/wk (98872) **\$14,999**

hp Inkjet cp1700 Series

professional wide-format (A3+) colour printers

Designed for small businesses and design professionals. A powerful communication tool that produces professional colour business documents, collaterals, premium • Up to 16 ppm black and 14.5 ppm colour (cp1700 printer) • 16 MB built-in RAM • Up to 5,000 pages per month duty cycle • Supports :Windows 95/98/Me; NT 4.0/2000 • Energy Star compliant • Off mode: 6 watts • 150-sheet standard input tray • Wide format printer media sizes 4 x 6 "/A6 to 13 x 19 "/A3+ • straight paper path



NEW inkjet

hp colour Inkjet cp1700

Rent* \$12.87/wk (E0150) **\$1,175**

hp colour Inkjet cp1700d

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hp LaserJet 1000 USB

(C9361) **\$599**

hp LaserJet 2200 Series



hp 2200d (base unit) (B9956)

\$1,537

hp 2200dn (B9957)

\$2,045

hp 2200dtn (B9898)

\$2,585

hp LaserJet 4550 Series



hp colour LaserJet 4550 A4 16PPM 64Mb (B2381)

\$3,825

hp colour LaserJet 4550N A4 16PPM 64Mb 10/100 (B2382)

\$4,425

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hp deskjets & officejets

hp deskjet 845c

Step up to HP's photo-quality printer that gives you true-to-original brilliant colours

- crisp black text and photo-quality images
- up to 600 x 1200 dpi
- no swapping ink cartridges to print outstanding photo-quality colour
- ideal for work and other creative projects
- prints up to 8 ppm black and 5ppm colour
- USB connectivity



(D3921)

\$169

hp officejet V40



All In One Scanner/Printer/Fax/Copier

- Full-featured printing, faxing, scanning and copying-all in colour
- Convenient access to colour faxing, copying and scanning from the front panel
- Enhanced printing and copying speeds and richer, sharper colour on all four functions
- State-of-the-art performance and speed combined with time-saving features, user-friendly simplicity and a self-sufficient work space at a competitive price
- Reliable and durable- backed by award-winning HP Customer Care



(D7688)

\$499

hp deskjet 948c

Explore your creativity and print photos easily with hp's premium photo-quality colour printer

- up to 2400 x 1200 dpi
- optional automatic two-sided printing
- space-saving fold-up paper tray
- best photo-quality with HP PhotoREt 3
- parallel and USB connectivity
- prints up to 12 ppm black and 10 ppm colour



(D3927)

\$289

hp PSC 750

Printer-scanner-copier

Ideal for: Busy families that need convenience and quality Savvy users with limited work space

Students who want to get creative with cards, newsletters and more Benefits: Make quick colour copies at home from 3.5 inches up to 8.5 x 14 inches. Scan your favourite snapshot to e-mail friends and family Print on photo paper to put in your photo album.



(C7655)

Rent* \$6.24/wk
\$569

hp deskjet 990cxi

Best Photo-Quality plus Premier Business Printing

- Infrared printing from PDAs, notebook computers, and other mobile devices.
- Up to 17 ppm in black, 13 ppm in color
- Optical sensor detects paper type, then selects the ideal print mode
- Automatic Duplex printing capability



(B1967)

Rent* \$6.56/wk
\$599

hp officejet G85

All Colour: Printer, Copier, Scanner & Fax

Prints at up to 12 ppm black, 10 ppm color using HP photoREt 3 Precision Technology, 2400 x 1200dpi colour, as well as flatbed 36-bit scanning, faster copying speeds, and upgradeable networking capability which allows one unit to be shared by several PCs. Each model combines a colour printer, scanner, copier and a walk-up colour fax.



(A0062)

Rent* \$12.81/wk
\$1,169



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hp scanjets & consumables

hp scanjet 4400c

Scanner that does it all!



Optimises scanned photos, converts black-and-white line art into infinitely scalable vector files and automatically creates editable text from scanned documents with a simple drag-and-drop, copy and paste or scan to. • MS Windows 95/98/2000/Me/NT4.0 • bit depth: 48-bit colour • 1yr hardware warranty & telephone support

(C5904) **\$269**

hp scanjet 5400c

Scanner for professional use!



• MS Windows 95/98/2000/Me/NT4.0 • Includes USB & parallel cable and power cord. • res: 2400dpi optical, 2400 x 2400dpi hardware, unlimited dpi enhanced. • modes: Front panel scan, copy, e-mail, photo reprint or share-to-web Buttons from software. • bit depth: 48-bit colour • 1yr hardware warranty & telephone support.

(C7201) **\$415**

hp scanjet 7400c

Market-leading image quality!



Easy to create impressive communications projects and manage business critical documents while saving time and resources. • up to 2400 dpi • true 48-bit color you'll get professional results in seconds. • Windows® 98, 2000, Me, NT® 4 and Universal Serial Bus (USB). • 1yr hardware warranty & telephone support.

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(B9949) **\$979**

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(97335) **\$139**

No 49 Tri Colour Inkjet Print Cartridge
(22331) **\$69**

toner

hp C4092a LaserJet print Cartridge for HP LaserJet 1100, 3200
(70459) **\$130**

hp 92298a LaserJet Print Cartridge for LJ 4/M,4+/M+,5/ N/M 6800 page Toner
(07995) **\$199**

hp 92298x LaserJet Print Cartridge for LJ 4/M+/M+/ 5/5M/5N 8800 Page Toner
(42504) **\$209**

hp C3909a LaserJet Print Cartridge for 5Si/Mopier/ 8000 15000 Page Toner
(26450) **\$359**

paper

hp C6065a Iron On T-shirt Transfers A4 10 Sheets
(52818) **\$29**

hp Q1936a Premium Inkjet A4 paper 200 Sheets
(D9329) **\$39**

hp Q1937a Premium Inkjet paper - A3 100 sheets
(E3640) **\$55**

hp C7014a Colour fast Photo paper - Glossy 20 Sheets
(C6528) **\$58**

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EPSON STYLUS C20UX

BONUS USB CABLE (in box)



The Easy-To-Use Home Colour Printer that gives photo quality printing, and delivers best-in-class for overall cost effectiveness. **KEY FEATURES** • Up to 720 x 720 dpi photo quality printing • Fast, easy set-up and operation • USB equipped for simple plug and play printing • Up to 6.5 ppm black text printing

(C5572) **\$119**

LASER PRINTER

EPSON AL-C2000



Workgroup colour laser printer that delivers professional quality output. Up to 20ppm mono, 5ppm in full colour, EPSON 2400dpi RIT, dual processors, 32MB memory, integrated network adapter, Proprietary EPSON imaging technologies ensure superior output with clear, sharp text and high-contrast, colour-accurate images.

(A7365) **\$4,279**

PRINTER

EPSON STYLUS C60



• 2880 x 720 dpi resolution • Fast 12ppm* for both Black and Colour Text Memo (*at economy mode) • Precise-Super fine detailed printing with up to 2880 dpi, MicroPiezo Print Head and 4pl Variable Sized Droplet Technology • Four-colour ink system.

(D0042) **\$269**

PRINTER

EPSON AL-C1000



High quality, affordable A4 colour laser printer. Ideal for small business or home office environments. Up to 20ppm mono, 5ppm in full colour, EPSON 2400dpi RIT, 80MB memory, low running costs and easy to maintain. Proprietary EPSON imaging technologies ensure superior output with clear, sharp text and high-contrast, colour-accurate images.

(E3772) **\$2,769**

SCANNER

EPSON PERFECTION 1250

This new EPSON scanner features resolution and scanning technologies which sets it apart from other scanners in its price class. • 1200 x 2400 dpi optical resolution • 48-bit colour depth (internal) • USB interface for plug-and play

(C9439) **\$215**

EPSON PERFECTION 1650

Perfection 1650 series offers full auto scanning mode for documents and photos, and the Perfection 1650 Photo, in addition, feature auto batch scanning mode for film and slides, using its film adapter. Scanning • 1600 x 3200 dpi optical resolution • USB interface for plug-and-play

(C9387) **\$358**
with film adaptor (C9892) **\$479**

PRINTER

EPSON STYLUS C40SX/C40UX



The Easy to use Quality Home Colour Printer with up to 1440 dpi. **KEY FEATURES** • Up to 1440 x 720 dpi photo Quality printing. • Fast, easy set-up and operation of both models. • Choice of USB or Parallel models, simple plug and play printing. • 8ppm black text speed and 3.9 ppm colour text speed.

C40SX (Parallel) (C5574) **\$169**

C40UX (USB) (C5573) **\$169**

C40UX BONUS USB CABLE (in box)

PRINTER

EPSON STYLUS PHOTO810



• On-demand Inkjet (piezoelectric) • 48 x 6 nozzles • Black text (memo) A4 Approx. 12ppm (Economy) • full page colour A4 Approx. 1.4ppm (Normal)* • USB compatible • Colour: Cyan, Magenta, Yellow, Light Cyan, Light Magenta • DRIVERS Microsoft® Windows® 95/98/2000/Me/NT® 4.0.

(E0536) **\$369**

PRINTER

EPSON STYLUS C80



• Up to 20 ppm* for black text • Constant monitoring of ink consumption with the Intelligence™ ink system in each of the four ink cartridges • Pigment inks for prints that are fade-, water- and smudge-resistant • Super fine printing with up to 2880 dpi.

(D1665) **\$589**

PRINTER

EPSON STYLUS COLOR1290



• A3+ • 6 Colour photo printing • True Border-free Edge to Edge printing • High Speed 4pl Ultra MicroDot printing at 2880 dpi • Over 20 years lightfast prints • Features Print Image Matching technology

(C2150) **\$1,059**

SCANNER

EPSON EXPRESSION 1640XL

The Expression 1640XL A3+ scanner features EPSON's most advanced scanning technologies providing high speed, maximum detail and superior sharpness and clarity.

(B1330) **\$5,499**

MONO LASER PRINTER

EPSON EPL 5900



• 12ppm • True 1200dpi Resolution • 200MHz RISC Processor • USB & IEEE1284 Parallel Interface • 8MB Memory – Expandable up to 136MB • Standard 250 Sheet Multi Purpose Tray & Optional 500-Sheet Lower Paper Cassette Unit

(E5160) **\$669**

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PRINTERS...

S100SP Bubble Jet Printer

- High speed printing, up to 5 ppm black text and up to 2 ppm colour.
- USB interface for windows
- Dual ink drop sizes for fine printing
- 720 x 360dpi

(E4209) **\$145**

S200SP Bubble Jet Printer

- Vivid Photo Function
- 2880 x 720 dpi
- Up to 5ppm black & white text
- Dual Ink Tanks

(E1132) **\$185**

S300 Bubble Jet Printer

- Up to 11 black and white and 7.5 Colour pages per minute
- Up to 2400 x 1200dpi print resolution
- Separate black and tri-colour ink tanks
- USB Interface for Windows and Mac
- Compact footprint - ideal for the home office
- Colour lasts up to 25 years using Canon's Photo Paper Pro

(D4023) **\$245**

S750 Bubble Jet Printer

- First Bubble Jet With 20ppm
- 2400 x 1200DPI
- Up to 20ppm in mono
- Four Individual Ink Tanks

(E1134) **\$539**

S900 Bubble Jet Printer

- Prints A4 Photo's in approx 1min
- 2400 x 1200 Optical DPI
- Six Individual Photo Ink Tanks

(E1135) **\$875**

S9000 Bubble Jet Printer

- A3+ Printing on S9000

(E1248) **\$1,169**

LBP810

(C3917)

\$498

•High

resolution 600 dpi printing for crisp text and graphics •8 ppm engine speed •Wide media compatibility, print transparencies, envelopes, postcards etc •Outstanding line definition - equivalent to 2400dpi horizontally •Parallel & USB connections

LBP1000

(95983)

\$968

•10 pages per minute print engine at 1200 dpi resolution •Energy saving 'On-Demand' toner fusing •Cost-saving 'economy' printing mode •Powerful processor to ensure maximum throughput

LBP1760e

(B1751)

\$1,259

• 17 page per minute print speed •Energy saving 'On-Demand' toner fusing •Powerful RISC processor •PCL6 Print Language emulation

Canon

SCANNERS...

N640Pex Flatbed Scanner

- Optical resolution of 600 x 1200dpi
- 42-bit input
- Only 4 cm tall
- Parallel interface
- Scans up to A4 size (Quiet operation)
- Complete software package
- LIDE Technology

(D4026) **\$135**

D646U Flatbed Scanner

- Fabulous Entry Level Scanner
- 600 x 1200 Optical DPI
- Z-Lid For Easy Book Scanning
- Modern Software Suite
- Archsoft Photo Studio 2000 + OCR Software

(E1151) **\$175**

N670U Flatbed Scanner

- One touch scan controls
- USB Interface
- 600 x 1200 dpi
- Scan, click and burn photos onto CD's.
- Advanced Z-Lid cover simplifies scanning of bulky items, books and magazines

(D1005) **\$175**

N1240U Flatbed Scanner

- Amazing 1200 x 2400dpi optical with selectable resolution up to 9600dpi.
- Stylish charcoal and aluminium finish.
- New Z-lid for scanning thick books etc.
- Software included OmniPage and PhotoShop Elements
- 1200 x 2400dpi

(C7589) **\$279**

D1250U2 /D1250U2F Flatbed Scanner

- High Speed At the Right Price
- 1200 x 2400 DPI Optical Resolution
- USB 2.0 For Faster Scanning
- Easy One Touch Control
- Photo Studio 2000 Omnipage Pro 9.5 OCR Software

(E1246) **\$235** (E1230) **\$379**

• 35mm Film Scanning

LBP1760e

(B1751)

\$1,259

LBP2000

NEW

(E1235) **\$1,609**

•Affordable A3 Laser Printing •1200 x 600 Optical dpi •Up to 20ppm •PCL6 With Complete Network Options

CAMERAS...

A100

NEW



(E5357)

\$499

PSA30



1.2 MEGA PIXEL (E3967)

\$657

PSA40



2.0 MEGA PIXEL (E3969)

\$845

CAMERAS...

PowerShot DIGITAL IXUS V2

NEW



(E5350)

\$1,039

PowerShot DIGITAL IXUS 330

NEW



(E5361)

\$1,219

\$30 / \$40



3.2 MEGA PIXEL (D5915)

\$1,475

4 MEGA PIXEL (D5937)

\$1,764

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TECHNOLOGY™



magicolor™ 2200 DeskLaser

The first colour laser printer at a monochrome price

Affordable A4 colour for Windows workgroups. The low purchase price and operating cost of the magicolor 2200 DeskLaser make it affordable for any business requiring colour and black & white printing.

Rent* \$28.43/wk (C0669) **\$2,899**

Print Speed	5 ppm colour, 20 ppm mono
Resolution	1200 x 600 dpi
Interface	NETWORK READY, 10BaseT/100 Base TX Ethernet, Bi-directional IEEE Parallel
Compatibility	Windows 95/98/2000/Me, XP, NT 4.0



PagePro 1100L

Fast and inexpensive desktop laser printer

The award winning PagePro 1100L – A4 monochrome laser is the right business solution. It's fast at 10 pages per minute, and offers a high quality 600 dpi. It's also an inexpensive personal printer.

Rent* \$6.45/wk (A1438) **\$589**

Print Speed	10 ppm A4 mono
Resolution	600 x 600 dpi
Interface	Parallel
Compatibility	Windows 3.1x95/98/2000/Me, NT 4.0



PagePro 9100N

NEW PRODUCT

Networkable A4 & A3 monochrome laser printer

The PagePro 9100N represents the best value in A3 network printing! Even with print speeds of 35 pages per minute and free Ethernet interface, its price matches what you'd expect to pay for smaller, slower laser printers.

Rent* \$36.44/wk (E3659) **\$3,899**

Print Speed	35 ppm A4, 17 ppm A3, mono
Resolution	1200 x 1200 dpi
Interface	10/100BaseTX Ethernet
Compatibility	PostScript 3, PCL 6, PDF, HP-GL, PCL 5e

spotlight



Magicolor 3100

16ppm A4 tandem colour laser printer

Finally there's a desktop colour laser printer for business that prints just as fast in colour as it does in black and white. The magicolor® 3100 delivers up to 16 pages per minute to get the job done. It also has automatic duplexing for two-sided printing.

Rent* \$75.29/wk (D9169) **\$8,678**

Print Speed	16 ppm colour & mono
Resolution	1200 x 1200 dpi
Interface	NETWORK READY, 10BaseT/100 Base TX Ethernet, Parallel
Compatibility	PostScript 3, PCL6, PDF, HP-GL

Video & Multimedia Tools

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Premiere 6.0 (C0023) **\$799**

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(DV/Analog In & Out)

(C9352) **\$2,199**

Hardware MPEG Encoder option (Direct to MPEG2 encoding from Analog & DV source)

(D6102) **\$699**



DVRaptor-RT
(DV In & DV/Analog Out)

(C6461) **\$1,499**

With Adobe Premiere 6.0

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MVR-1000 HIGH-PERFORMANCE REAL TIME MPEG-2 CAPTURE BOARD



MVR1000 is a PCI based encoder that converts analog video to high quality MPEG-1 & 2 in Real-Time as well as DV to MPEG encoding via any DV solution that uses Adobe Premiere.

NEW

(E4965) **\$1,499 RRP**

ADVC-100 DV CONVERTER



ADVC-100 allows you to convert your analogue video to DV or vice versa. Compatible with NTSC/PAL video and all DV editing systems.

"THE CONVERTER FROM HEAVEN"
says Peter Blasina
Editor & Technical
Director Australian
Video Camera
Magazine)

(D4514) **\$699**

ADVC-100 With DVRAPTOR-RT & Adobe Premiere 6.0

(D6096) **\$1,949**

Hauppauge! Allows you to Watch live TV on PC!



Hauppauge TV GO

(89063) **\$139**

Hauppauge TV GO FM

(89064) **\$189**

Hauppauge TV USB

(89066) **\$255**

Hauppauge TV USB FM

(98455) **\$279**

TV TUNER CARD & VIDEO RECORDER

PVR allows you to watch/record live TV onto your hard drive in DVD quality (MPEG2).



Hauppauge PVR USB

(D1776) **\$549**

Hauppauge PVR PCI

(B2593) **\$599**

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Hauppauge TV Radio Supports Stereo TV, FM Radio, Teletext and Remote Control!!

(E6189)

\$299

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(D4342) **\$114**



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(D4410) **\$225**



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MATROX MILLENNIUM G550

The Matrox G550 graphics card series comes standard with 32 MB of Double Data Rate (DDR) memory, a 360 MHz primary RAMDAC, and a unique HeadCasting Engine accelerating 3D online communication.

The Millennium G550 is a titan among graphics cards with trendsetting appeal for the business and home entertainment markets. Comprising an extensive feature set including third-generation DualHead® display capabilities, outstanding 2D performance, and DVI - I support, the Millennium G550 delivers exceptional graphics performance and product stability and ignites a new trend in online communication.

KEY FEATURES:

- Matrox G550 chip
- 32 MB high-speed Double Data Rate (DDR) memory
- UltraSharp 360 MHz RAMDAC
- Explosive Windows desktop acceleration
- HeadCasting Engine for hardware-accelerated 3D facial animation
- Bundled HeadCasting software for 3D communication
- True multi-display support under the Microsoft® Windows® 2000 operating system
- Third-generation DualHead® technology including eDualHead browser enhancements

G55+MDHA32DB	Matrox G550 32Mb Single DVI output, Dual Head display	OEM	(C7873)	\$305
G55+MADDA32DB	Matrox G550 32Mb Dual DVI output, Dual Head display	OEM	(C7874)	\$335
G55+MDHA32DR	Matrox G550 32Mb Single DVI output, Dual Head display	RETAIL	(C7875)	\$345
G45+MVTA32DRi	Matrox G450 32Mb Dual Head display	RETAIL	(C0016)	\$675

Marvel G450e TV (PAL) 32Mb DDR inc Matrox PC-VCR and Matrox DVD Inc Ulead Videostudio 4.0 and Ulead Photo Explorer 6.0



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56K V.90 External Voice/Fax/Data Modem



(87970) **\$95**

SWANNSMART USB MODEM

56K V.90 External Modem



(B9930) **\$105**

SWANN WIRELESS MICROCAM

- Connects to TV, VCR or Video Monitor
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- Up to 100m Transmission Range
- Full motion crisp colour picture
- 1 year "Hassle Free" warranty

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SWANN USB MULTI-HUB

USB 4-Port Hub

- Easy and convenient access to USB ports
- Allows "Hot Swapping"
- PC & Mac compatible
- Supports bus-powered and self-powered USB peripherals (including printers, scanners, modems, keyboards and mice)
- 1 year "Hassle Free" warranty

(75882) **\$55**



Multi-Keypad

*Numeric function only

USB Multi Function Numeric Keypad

- Programmable handy multimedia hot keys to access e-mail, internet, control speaker volume and more
- Convenient "0", "00" and "000" keys for quick data entry
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- Great for travelling or to fit on the smallest desktop (D5967) **\$45**



SWANN FIREWIRE™ PRO DV KIT

Everything you need for easy and fun digital video editing

- Captures full screen video from your camera to your computer's hard drive with transfer speeds of up to 400Mbps
- Complete with Ulead 5 VideoStudio DVD Special Edition, SuperGoo, PhotoSoap and VideoWorks software CDs
- 1 year "Hassle Free" warranty

(A1794) **\$179**



SWANN FIREWIRE™ STARTER KIT

- Captures full screen video from your camera to your computer's hard drive with transfer speeds of up to 400Mbps
- Bundled with Ulead® 5 VideoStudio™ DVD Special Edition
- 1 year "Hassle Free" warranty

(75886) **\$115**



SWANNFIRE CARDBUS

FireWire PCMCIA Card

- FireWire solution for laptops
- Data transfer speeds of Up to 400Mbps
- For laptop users and travellers
- Allows "hot swapping"
- 1 year "Hassle Free" warranty

(C2307) **\$129**



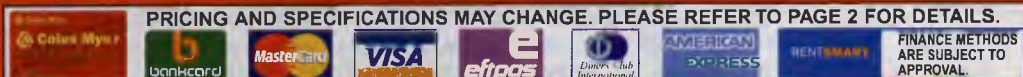
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- Speak, and your words appear on screen and in memos, letters, reports, and e-mail. Integrated with Microsoft Word, Microsoft Excel, Microsoft Outlook Express, and Corel WordPerfect.
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Unleash the Power of the Spoken Word!

- Dive into the world of speech recognition with Dragon NaturallySpeaking Essentials. It learns to recognize your voice in about five minutes.
- Just speak to your computer and your words accurately and immediately appear in e-mail, chat rooms, Instant Messages, and virtually all Windows based applications.

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Mechanical Desktop
6 (C7928)



Autodesk Land
Desktop 3 (C9623)

AutoCAD LT 2002



(C4281)

\$1,780

(C4282)

UPGRADE **\$625**

AutoCAD LT® 2002 is the only 2D CAD program providing 100 percent DWG compatibility with AutoCAD® 2002 based products. That means you can open, edit, and exchange drawing files (DWG) with complete confidence. A

comprehensive Internet toolset streamlines collaboration between design team members, shortening cycle times and reducing costs. Plus new enhancements like automated associative dimensioning help you create quality designs more efficiently. AutoCAD LT® 2002. Connected. Collaborative. And powerfully 2D.

AutoCAD 2002



(C7856)

\$7,955

With AutoCAD® 2002, you can get your design information where it's needed—quickly, easily and accurately. Its design collaboration tools help you maximize the value of your design data by sharing files, accessing design resources, and meeting in real time with the entire project team. With

powerful features such as CAD standard management tools, associative dimensioning, new Object snaps, 3D Orbit and more, AutoCAD® 2002 will help you create quality designs more efficiently giving you that strategic competitive advantage.

Autodesk VIZ 4

Bring your designs alive with Autodesk Viz 4, a multimedia software tool that provides a visually rich, 3D, interactive user interface. Autodesk VIZ 4 is easy to use & is interoperable with AutoCAD® applications. Upgrades also available.

(E1065) **\$3,515**



Volo View 2

Volo™ View 2 software is a cost-effective, easy-to-use digital design viewing solution that lets everyone on your team electronically review, mark up, measure, and plot AutoCAD® and Autodesk Inventor™ based drawings. Upgrades also available.

(D1736) **\$385**



AutoSketch 8

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(D9136) **\$229**



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(D5996) **\$98**



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(A1319) **\$149**



Symbols 2000 Engineering

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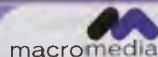
(A1320) **\$149**



MAY

52

what the web can be.



FLASH MX



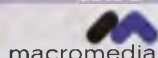
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UPGRADE (E4828) **\$475**

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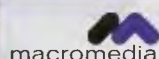


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FULL VERSION (C6733) **\$1,580**

UPGRADE (B4835) **\$849**



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* Now includes Coldfusion 5.0 Studio, JRun 3.0 Studio and Homesite 5

FULL VERSION (B6785) **\$1,299**

from UltraDev UPGRADE (D3407) **\$349**



DREAMWEAVER 4

Professional web development solution!

Create a professional web site with Intuitive, Macromedia user interface. Manage your site with the text-editing environment which gives hand-coding professionals the control they demand. Instantly create high-impact Macromedia® Flash™ graphics directly in Dreamweaver, drop in content from Microsoft Office and easily import Fireworks, pop-up menus and buttons to create engaging Web experiences.

* Upgrade from Dreamweaver

FULL VERSION (B3026) **\$649**

UPGRADE (B3137) **\$337**

* Now with Homesite 5



COLDFUSION 5

Easily assemble powerful solutions

Macromedia ColdFusion 5 is the fastest way to build and deploy powerful Web applications. Create the applications you need - quickly and easily - with ColdFusion 5, including content-publishing systems, online stores, business reporting and self-service solutions. Build applications quickly with an intuitive tag-based scripting language and rich, visual tools - ColdFusion Studio and Dreamweaver UltraDev.

Coldfusion Server Pro Edition (C9617) **\$2,399**

Coldfusion Enterprise (C9618) **\$9,279**



FIREWORKS 4

The best solution for Web graphics!

Create, edit and animate Web graphics in a robust professional environment. Add advanced interactivity, optimise images and integrate seamlessly with Macromedia applications for efficient development.

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UPGRADE (B4664) **\$339**



FREEHAND 10

Maximise your creative abilities!

FreeHand 10 offers graphic designers unsurpassed productivity features including Master Pages, the new Macromedia User Interface and sophisticated vector-based illustration tools. Enhance your project workflow by creating once, then publishing across multiple media including print, Web and beyond.

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UPGRADE (C2460) **\$339**



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\$459

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\$1,149

UPGRADE (C5177)

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Intelligent graphics at work

FLOWCHARTER PROFESSIONAL 2000

The power-packed successor to ABC FlowCharter, iGrafx FlowCharter™ 2000 Professional gives you structured diagramming power with unique built-in intelligence, providing invaluable new ways to visualise solutions for real-world business problems. iGrafx FlowCharter makes it easier than ever to diagram business processes, networks, organisational structures, web content, and much more. Superior business-oriented functionality includes seamless Microsoft Office compatibility, robust HTML support, and powerful VBA 6.0 extensibility, as well as network-enabled application deployment, media management, and collaboration tools.



(B4376)

\$665

Picture Publisher 10 PROFESSIONAL

The premier easy-to-use solution for professional image processing and management — from start to finish. Enhance pictures using powerful editing tools or get creative with extensive special effects, wizards, and macros. Fully enabled 64-bit CMYK and 48-bit RGB image resolution support, alongside the Kodak® Color Management System, ensures that your images are always of the highest quality. If you're publishing to the Web, Picture Publisher has a complete toolset to optimise your images for your Web audience. Also included is the new PhotoAlbum, featuring helpful batching and indexing tools that make image management easier and faster.



(D5803)

\$315

Designer⁹

Is everything you need for technical illustration, image editing and web graphics providing precision drawing and versatile publishing tools along with 55 import/export filters including CAD, Adobe PDF and Macromedia Flash. Also included, Picture Publisher 9 is an innovative professional image-editing application with incredible visual effects.



(C6730)

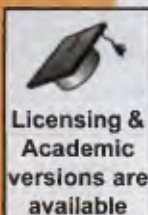
\$845

Picture Publisher 10 DIGITAL CAMERA EDITION

Manage, correct, enhance, create, and publish your digital pictures quickly and effectively. The perfect companion for your digital camera. Affordable yet powerful, Picture Publisher is ideal for small businesses and freelance artists that need to create high-impact graphics for print, presentations and the Web. As an essential component of any digital darkroom, you can use one-click macros to enhance and correct your pictures, apply one of many artistic special effects to turn your photo into a work of art or use PhotoAlbum to effectively manage, enhance and batch process your photos.



(D8833)

\$109


Better Things to do than Guard your Network all Day?

Mail.....entials

Email Content Checking & Anti-virus for Exchange



Mail essentials is the market leading email content security software. It acts as an Email Firewall and protects you from headline-hitting viruses such as Sircam, as well as email attacks targeted at your organisation. In addition, Mail essentials adds important key features to your mail server, such as Anti-Spam, Email encryption, Email archiving, Disclaimers, Personalised auto responders, POP3 downloading and more. Native Exchange 2000 version is now available which also scans internal mail!

from: 10 users

\$677

(C4380)

LANGuard

Content Filtering and Anti-virus for ISA Server



LANGuard for ISA Server helps you protect against the huge security risk posed by HTTP and FTP access from the workplace. Built on top of Microsoft ISA server, it scans all inbound material for viruses, Trojans or objectionable material. Using LANGuard's powerful rules engine, you can configure rule sets that allow you to quarantine dangerous files for administrator approval. LANGuard also enables you to set up rules that can prevent unproductive use of the Internet at the workplace.

from: 25 users

\$839

(C4366)

LANGuard

Intrusion Detection through Security Event Log Monitoring



LANGuard Security Event Log Monitor (S.E.L.M.) is a revolutionary new intrusion detection product that alerts you to any unauthorised activity occurring on your network by monitoring the security event logs of all your Windows NT/2000 servers and workstations. A firewall will offer no protection against attacks originating from within the company. LANGuard SELM alerts you to possible intrusions/attacks in real time.

from: 5 User Workstations

\$265

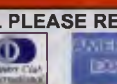
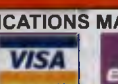
(C9889)



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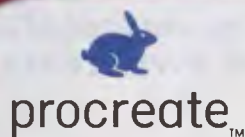
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Save time - save money with Corel



procreate™
(C9237) **\$825**
UPGRADE (C9239) **\$485**

Painter 7

Part of the **procreate™** line of software for creative professionals, Painter 7™ captures the real painting experience. New water colour technology is so true to life, you can watch paint drip and blend together. The new Liquid Ink layer mimics the viscosity of a thick, gluey medium like ink or paint. It also features user interface enhancements that are specific to the Windows® environment, including palette tools, sliders and more. An ideal complement to Adobe® Photoshop®, Painter 7 lets you combine advanced painting capabilities with photo editing to extend the creative range of your work.



Not all items are in stock at all stores but can be ordered for Pick-up or Delivery#

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KnockOut 2.0
(D3901) **\$699**

Part of the **procreate™** line of software, KnockOut 2 lets you preserve fine image details that were once impossible to mask precisely. It's an ideal plug-in for Adobe Photoshop®.



Bryce 5
(C5869) **\$675**
UPGRADE (C9209) **\$349**

Create breathtakingly realistic 3D landscapes and animations with Bryce 5. Smooth network rendering saves valuable time by letting you render images on multiple computers. A new Light Lab gives you robust control over lighting direction, and the new Tree Lab ensures a more accurate depiction of real-world environments. Bryce 5 - opening new worlds of creativity.

KPT 5
(C5870) **\$329**

Explore fantastic textures, vast fractal vistas, complex 3D objects and endless new permutations of radical image-altering algorithms with KPT™ 5, a premier collection of plug-in software tools for Adobe Photoshop® & compatible host applications.

KPT Vector Effects 1.5
(A4757) **\$339**

KPT Vector Effects® 1.5 is a powerhouse of creativity plug-ins for Adobe® Illustrator® 7, 8 and now version 9. It includes over a dozen plug-ins to dramatically extend the possibilities of your digital illustrations.

Word Perfect Office 2002 Standard

(C3601) **\$845**
UPGRADE (C3602) **\$349**

Experience the latest performance innovations & publish direct to PDF from the office suite you know and love with WordPerfect® Office 2002 - Standard Edition, a powerful software package that delivers time-saving features and outstanding compatibility.




KPT Effects
(D1534) **\$395**

Another powerhouse in the **procreate™** line of graphics software, gives professional designers an extraordinary collection of creative filters. It dramatically extends the boundaries of image editing. Image transformations and original effects enhance your creativity and your productivity.



CorelDraw 10
(B1161) **\$1,225**
UPGRADE (B1162) **\$475**

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KPT 6
(C1248) **\$339**

KPT™ 6 is an extraordinary collection of image filters that produce unlimited, spectacular effects for print and the Web. KPT 6 includes 10 plug-ins that extend and enhance the creative possibilities of Adobe® Photoshop® and compatible products.

Word Perfect Office 2002 Professional

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UPGRADE (C3604) **\$569**

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5 User Pack

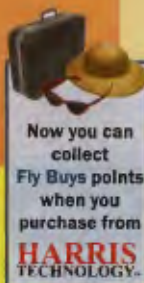
(E0704) **\$645**

10 User Pack

(E0705) **\$1,109**

25 User Pack

(E0707) **\$2,420**



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- Digital Immune System™, automation delivers fast, reliable, and hands-free virus detection, analysis, isolation, and repair.
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- Exclusive NAVEX™ technology updates scanning and virus repair engines without having to redeploy software.
- Supports Microsoft® Windows XP desktop and Microsoft Terminal Server environments.
- Backed by Symantec Security Response - the world's leading anti-virus and Internet Security research and response organisation.

Norton AntiVirus Corporate Edition 7.6 for Small Business Desktop & Server

Platforms supported:

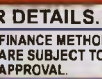
Server	Client	
Windows NT	DOS	Windows 2000
Windows 2000	Windows 3.x	Windows ME
Netware 3.12 and above	Windows 9.x	Windows XP
	Windows NT	

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This bundle from Symantec offers both value & protection for your PC. Norton SystemWorks 2002 protects your PC against virus threats, optimises performance and provides quick and easy system recovery. While Norton Personal Firewall 2002 keeps hackers out and personal data in.

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Norton AntiVirus 2002

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Windows
READY!

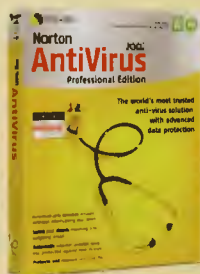
(C9612)
\$85

Norton AntiVirus
5 User

(D3475) **\$259**

Norton AntiVirus 2002 Pro

Norton AntiVirus 2002 Professional Edition provides the world's leading anti-virus solution now for small businesses. Includes new features to protect data on PCs and Palm OS.


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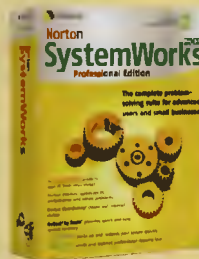
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Norton SystemWorks 2002 Professional Edition

Norton SystemWorksPro (D0680)

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- Norton Ghost™ 2002 (D0281) **\$129**

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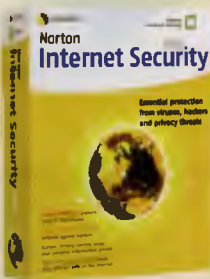
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Norton Internet Security 2002

Norton Internet Security 2002

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Norton Internet Security™ 2002 is your essential protection from viruses, hackers and privacy threats. Contains a full version of Norton Anti Virus™ 2002 & Norton™ Personal Firewall 2002


Windows
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(D0219)

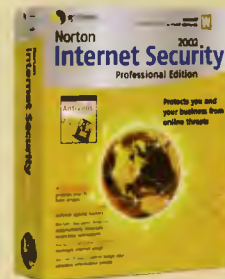
\$115*

Norton Internet
Security 5 User

(D4517) **\$345**

Norton Internet Security 2002 Pro

Norton Internet Security 2002 Professional Edition protects you and your business from online threats. It keeps your PC safe from viruses and hackers and safeguards your privacy.


Windows
READY!

NEW!

(D9319)

\$149

Norton pcAnywhere V10.5

Symantec's pcAnywhere™ is the world's leading remote control software. Encryption and authentication ensure secure access to remote computers. pcAnywhere also works with cable & DSL modems for faster remote connections...


Windows
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(D8088)

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Norton pcAnywhere
V10.5/5 user (D5935)

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Norton WinFax Pro V10.02



(D6011)

\$119

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Symantec Enterprise Administration

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Symantec Ghost™ 7.5 Corporate Edition

Symantec Ghost 7.5 Corporate Edition, the premier tool for PC deployment, recovery, cloning, and migration. Dramatically reduces IT costs by streamlining the configuration of networked workstations.

With Symantec Ghost Corporate Edition, an administrator can:

- Deploy whole application packages or specific PC changes (such as registry or desktop settings)
- Restore an OS image, incremental backup, or application onto a PC in minutes
- Migrate user settings and profiles to customise the PC

Key Benefits

- Reduces cost of ownership with comprehensive PC-management and user migration toolsets
- Streamlines the deployment of operating systems, application updates, and user settings to desktop and mobile workforces
- Accelerates migration to Windows 2000 and Windows XP
- Is Windows 2000 and Windows XP certified PC deployment and management solution

Other Options

Symantec Ghost Corporate Edition licenses offers nine licensing tiers. Maintenance licenses are available with all license purchases. These include one year of upgrade insurance and Help Desk Gold support

(D9426) **\$48** Min purchase of 10

pcAnywhere™ v10.5 for Windows®

pcAnywhere is a comprehensive remote control and file transfer solution for telecommuters and IS/IT professionals. It allows you to quickly and securely access remote computers. pcAnywhere v10.5 offers extensive security measures to ensure remote control hosts are correctly configured for optimal protection.

Key Benefits

- Windows XP logo certification - pcAnywhere 10.5 is "Designed for Windows XP".
- Host Assessment Tool - tests your configuration and highlights security limitations
- Logging improvements - Now log port scans on the pcA port and failed connection attempts.
- Rebootless Host - create host-only packages that do not require a reboot once the installation is complete
- NT authentication - now supports nested global domain groups.

Product Options

There are three licensing options available for pcAnywhere v10.5:

1. Host/Remote License

Full functionality—allowing one computer to both call out to control another computer, or accept an incoming call to be controlled.

(D9429) **\$252** Min purchase of 10

2. Host Only License

Host functionality—allowing one computer to accept an incoming call to be controlled by another computer.

(D9432) **\$136** Min purchase of 10

3. Remote Only License

Functionality—Remote Only allows one PC to call out and control another PC.

(D9435) **\$170** Min purchase of 10

***Please note all license orders require appropriate CD media to allow installation and deployment.**

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Accounting Plus V12

Improve internal workflow and increase the efficiency of your interactions with customers, suppliers and other contacts. MYOB Accounting Plus V12's new enhancements are designed to help increase productivity and make day-to-day business management easier.

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Premier v6
Powerful business management software

Premier V6

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(E5472) **\$1,175**

MYOB
First Accounts
V.3.5

(85770)

\$199

MYOB
First Accounts
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UPGRADE

(A9639)

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MYOB
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(E5372) **\$225**

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ACT! 2000 6 pack
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BrightStor Mobile Backup 3.5

(Licences Only)

Managing eBusiness Storage

NEW
PRICING

BrightStor Mobile Backup (formerly Lifeguard™) can reduce business risk by providing a fast, automatic and transparent solution for backing up and restoring data on remote/mobile computing platforms.

This powerful solution is designed to achieve the data protection needs of both mobile-computing users and IT organisations.

BrightStor Mobile Backup protects organisations and users from the crippling effect and cost of lost data, delivering all of these unique advantages :

- Protects and Restores data
- Minimises network connection time
- Offers easy and automatic installation

Features at a Glance :

- Automated backup process
- Point-in-time file restoration (E5958)
- Changed Byte and Block detection
- Disconnected Backup process
- Open File Agent

\$136Per node**BrightStor Mobile Backup 3.5 for Managing eBusiness Storage**

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Media (C2040) \$39**Full box products from BrightStor:**

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BrightStor Arcserve 2000 Advanced Edition
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(D4303) **\$1,539**

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Crystal Reports is the world standard for high performance reporting. Crystal Reports is a robust report designer that allows you to pull information out of virtually any data source (including XML, OLAP & relational), in the form of a report or query, via the web or windows.

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Upgrade Advantage Maintenance promotion - All customers who purchase Crystal Reports

8.5 Professional or Developer editions with upgrade advantage maintenance will receive this free picnic backpack.

As a subscriber to Upgrade Advantage Maintenance, you will automatically receive upgrades and updates as soon as they become available (within 12 months of purchase)

**BONUS
FREE PICNIC
BACKPACK***



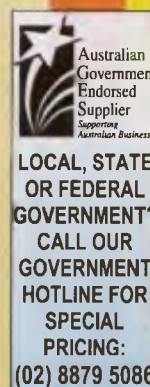
Crystal Reports Dev 8.5-Single User with maintenance (C3157)* \$1,190	Crystal Reports Pro 8.5- Single User with maintenance (D3524)* \$972
Crystal Reports Dev 8.5 Single User Upgrade with maintenance (E1241)* \$735	Crystal Reports Pro 8.5 Single User Upgrade with maintenance (B8681)* \$599

Powerful analysis for the Web

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Crystal Analysis Professional provides easy-to-use interactive high speed analysis for Microsoft SQL Server (OLAP) Services. It makes multi-dimensional data easy to understand, use and deploy - opening the power of interactive analysis to all. The result delivers better value to organisations, as more people will now be able to access information from multi-dimensional OLAP data, and gain better insights to help decision-makers impact business performance.

(C7805) **\$719**



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The #1 database for workgroups

TELL A FRIEND – AND WIN! Tell a friend or colleague about FileMaker Pro and you could win a Business Productivity Booster Pack valued at approximately \$990.00. By providing their contact details – with their permission – you will be entered into a draw to win: FileMaker Pro 5.5, FileMaker Mobile 1.0, Palm M105. To enter, complete you and your friend's contact details as outlined on the FileMaker web site at <http://www.filemaker.com.au/promos/tellafriendpromo.html> or by phoning FileMaker Customer Service 1800 028 316. See online for special conditions. Offer begins at 9am on 11 February 2002 and concludes at 5pm on 30 June 2002. By providing FileMaker with your friend's details, assume that you have received the permission of the third party and it is essential that their permission is gained prior to entering the promotion. FileMaker Inc's privacy policy is available at http://www.filemaker.com.au/legal/notice_privacy.html



FILEMAKER PRO 5.5

New FileMaker Pro 5.5 lets you quickly create solutions adapted to your workgroup needs, so you can easily track, manage, organise and share information and projects over an intranet or network. The ideal database to use with Microsoft Office.

- You can easily import and convert Excel files into functional and modifiable databases.
- You can use FileMaker Pro 5.5 for flexible data interchange between Microsoft Word, Oracle, or other ODBC-compatible applications.
- Instant Web Publishing provides direct access to FileMaker databases via a web browser to search, edit, delete, and update records.
- The new and faster Web Companion provides a richer FileMaker Pro experience over the Web, allowing you to collect and share information even more easily than before.

(C3982) **\$499**



FILEMAKER PRO 5.5 UNLIMITED

FileMaker Pro 5.5 Unlimited enables powerful Web database publishing which brings expanded productivity to the business workgroup, helping you manage, organise, and share important information over your intranet or the Internet.

- Utilise the FileMaker Web Server Connector to increase the performance, reliability and scalability of your FileMaker Web databases.
- Companies can use multiple copies of FileMaker Pro 5.5 Unlimited to set up a redundant array of inexpensive computers structure to provide scalable load balancing, fault tolerance, and ensure operation through fail over situations.
- May also be used with a wide variety of middleware applications, CGIs, and application servers for large-scale customised web solutions. Web database publishing has never been easier.

Unlimited Web deployment

(D4277) **\$1,979**



FILEMAKER DEVELOPER 5.5

FileMaker Developer 5.5 is the essential development environment for creating professional custom FileMaker solutions to be used for the Web, across workgroups or as royalty-free runtime applications. Powerful tools have been added to save you valuable development time.

- Test and verify your scripts with the new Script Debugger.
 - Document the structure of any FileMaker solution with the push of a button and view detailed information on fields, layouts, value lists, scripts, relationships and passwords.
 - Connect to external data sources with our JDBC, or ODBC drivers. You can also protect your solutions from modification and limit user controls.
- Whether you are developing commercial or in-house solutions, FileMaker Developer 5.5 is the tool of choice.

(D1365) **\$979**



FILEMAKER SERVER 5.5

FileMaker Server 5.5 – an easy to use relational database server – is the best way to host your FileMaker Pro 5.5 solutions on Windows 2000 & Red Hat Linux.

- FileMaker Server 5.5 high performance server engine supports up to 250 FileMaker Pro 5.5 guests simultaneously on multiple platforms with several protocol options and up to 125 hosted files.
- Includes automatic plug-in updating, scheduled backups and remote administration tools to monitor server activity and to control guest and file connections.
- Is designed for ease of use with supporting standard technologies such as LDAP and Windows authentication.

(C7741) **\$1,999**

FILEMAKER VOLUME LICENSE AGREEMENT PROGRAM

The FileMaker Volume License Agreement (VLA) program is a convenient way to provide your organisation with the FileMaker Pro software it requires while recognising significant savings.

- The first VLA discount tier starts with just 10 units. Discounts range from 25% to 65% off boxed product prices of FileMaker Pro. The more users you license, the better the savings.
- Licensing customers wishing to license FileMaker Server, FileMaker Pro Unlimited, FileMaker Developer, or FileMaker Mobile are eligible for a discount VLA single unit price point for these products. These products count toward FileMaker Pro discount tier minimums when purchased with FileMaker Pro.
- For qualified FileMaker Pro licensing customers, there is no minimum quantity required to purchase these products separately from FileMaker Pro. Media & Documentation - VLA orders include one CD set of the software media including an electronic documentation set (user manuals) for the product licensed. Printed documentation sets are not included in the license fee, but may be ordered for an additional charge.

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Microsoft Office XP

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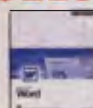
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Excel 2002					
Outlook 2002					
PowerPoint 2002					
Access 2002					
Publisher 2002					
FrontPage 2002					
Developer Tools					
Intellimouse Explorer					
Subscription	-	-	-	12 Months	12 Months
Full Version:	\$945	\$1,129	\$1,515	\$349	\$275
Part Number	(C2082)	(C2084)	(C2772)	(C2837)	(C7855)
Upgrade:	\$460	\$654	\$1,049	N/A	N/A
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Adobe Photoshop 7

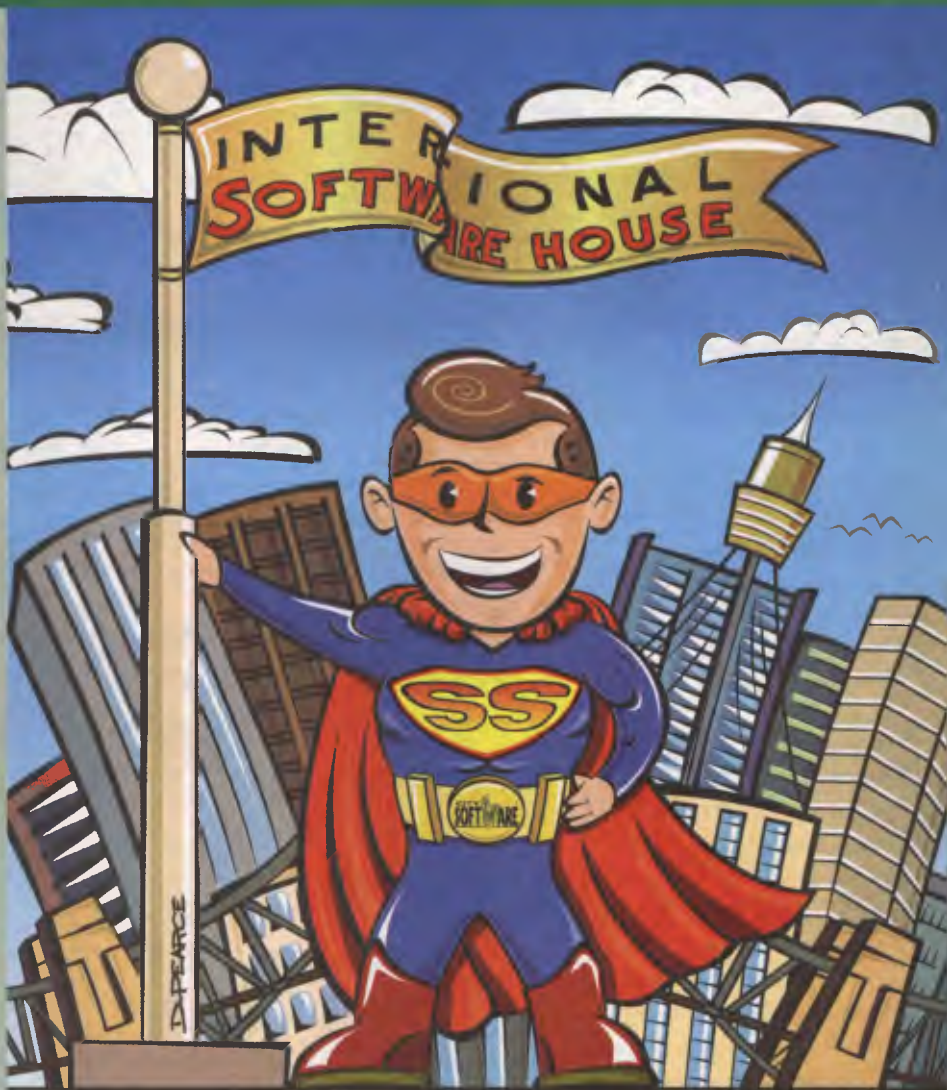


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- No swapping ink cartridges to print outstanding photo-quality colour
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hp deskjet 948c

- up to 2400 x 1200 dpi using premium photo paper
- HP ColorSmart 3 - optimises text, graphics and photos by automatically adjusting colour settings
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hp deskjet 960c

- Up to 2400 x 1200 dpi using premium photo paper
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- Low-ink indicator
- Optional automatic two-sided printing
- Win/Mac



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hp deskjet 1125c

- Print any size from postcards (A6)-(A3+).
- Up to 7ppm black and 5.5ppm colour
- HP ZoomSmart reduce or enlarge documents
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- Two-sided printing
- HP PhotoREt 2
- USB interface
- Win/Mac



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hp deskjet 350cbi

- Drop-tested and shock-tested
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- Mac and PC compatible



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Good quality prints, and a host of useful features.

- Up to 17ppm black printing and 13ppm colour
- 2400x1200dpi on photo paper
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- Parallel / USB interface
- Win/Mac



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hp deskjet 1220c

The high performance wide-format inkjet printer for all business needs

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- Full bleed A3+printing
- Parallel / USB interface
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CABLE**

\$849.00

Websearch Code .HWP436

RentSmart \$9.31pw

HP LaserJet 1200 Series

- All models have
- 1200 x 1200dpi
 - 15ppm
 - HP PCL 5e
 - 250 sheet tray
 - Parallel / USB interface
 - Win/Mac



1200N - HP JetDirect Network Card, optional scanner/copier adaptor, 16mb std, 10/100 Base-T

\$799.00

Websearch Code .HWP501

RentSmart \$8.76 pw

\$1299.00

Websearch Code .HWP502

RentSmart \$14.24pw

HP LaserJet 2200 Series

- All models have
- 1200dpi
 - 18ppm
 - 133MHz processor
 - HP PCL 5e/6
 - Parallel / USB
 - Win/Mac



2200D - 8MB 250 sheet tray parallel port

\$1549.00

Websearch Code .HWP503

RentSmart \$16.98 pw

2200DN - 8MB 250 sheet tray parallel port local talk

\$2059.00

Websearch Code .HWP504

RentSmart \$22.57 pw

2200DTN - 16MB 500 sheet tray parallel port 10/100 Base-T

\$2629.00

Websearch Code .HWP505

RentSmart \$28.78 pw

HP LaserJet 4100 Series

- All models have
- 1200dpi
 - 24ppm
 - 250MHz processor
 - HP PCL 5e/6
 - PostScript Level 3 emulator



4100 - 16MB parallel port

\$2099.00

Websearch Code .HWP511

RentSmart \$23.52 pw

4100N - 32MB parallel port 10/100 Base-T

\$2789.00

Websearch Code .HWP506

RentSmart \$27.35 pw

4100TN - 32MB parallel port 10/100 Base-T Includes extra 500 sheet paper tray

\$3249.00

Websearch Code .189299

RentSmart \$31.81 pw

PRINTERS

hp psc 750

The HP PSC 750 is a versatile, flatbed printer, scanner and copier all-in-one. Create colour brochures, make copies of price lists, and scan photos to use in your promotional literature - all using one compact unit, right at your desktop. Win/Mac



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scanner...
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RentSmart \$6.35 pw

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\$1839.00

Websearch Code ...EP5413

RentSmart \$20.16 pw

Stylus Colour 1160



\$579.00

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RentSmart \$6.35 pw

Stylus C20UX



Professional-level colour printing technology and quality in an easy-to-use printer. The STYLUS C20UX delivers image clarity and text sharpness with 720 dpi (dots per inch) printing resolution; and with EPSON's Ultra Micro Dot and Variable-Sized Droplet technologies, documents, photos, school projects and even original T-shirt transfers are printed just as you expect them.

With the STYLUS C20UX, EPSON's key inkjet differentiator - the EPSON PerfectPicture Imaging System - provides:

- MicroPiezo print head technology,
- Quick-Dry inks,
- AcuPhoto Halftoning, and
- EPSON Specialty Media.

The Easy-To-Use Home Colour Printer

\$119.00

Websearch Code ...EP5446

Stylus C60

It is a fact. If you want affordable, quality printing then you need an affordable, quality printer. Quality is precisely what you get. From the amazingly fast printing, to the print driver that is fun to use, right through to the fast, colourful and amazingly fine detailed prints, everything about this printer spells quality. Fast 12 ppm* for black text. Vibrant Superb and accurate colour printing with a four-colour ink system. Precise Super fine detailed printing with up to 2880 dpi, MicroPiezo Print Head and 4pl Variable Sized Droplet Technology intelligent ink system. Designed to work perfectly with the printer and media. To ensure you get the very best print quality and trouble-free, peace-of-mind printing, every print, every time.

\$285.00

Websearch Code ...EP5466

Stylus Colour C80

The business inkjet printer with super-fast 20 ppm, high quality, durable printing The EPSON STYLUS C80 represents a landmark in EPSON's award-winning SYLUS colour inkjet printers for serious business users. In a single printer, speed, precision, print durability and operational ease have been brought together, delivering a "no compromise" print solution.



\$599.00

Websearch Code ...EP5468

RentSmart \$6.57 pw

EPSON Stylus Photo 895

Delivering up to 2880 x 720 dpi, six-colour, True Borderfree printing of your photos, either from your computer or standalone printing from data via your digital camera memory card.



\$699.00

Websearch Code ...EP5464

EPSON

RentSmart \$7.66 pw

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Stylus C40UX

Optimum image detail and text sharpness with 1440 dpi resolution. With Ultra Micro Dot and Variable-Sized Droplet technologies, documents, photos and even T-shirt transfers are printed with incredible crispness and clarity.



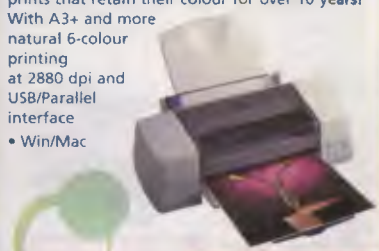
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Stylus Photo 1290

Exceptional speed, & can produce lightweight prints that retain their colour for over 10 years! With A3+ and more natural 6-colour printing at 2880 dpi and USB/Parallel interface



\$1019.00

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EPSON

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Stylus Colour C70

Fast 16 ppm inkjet printer for greater productivity In the world of business, printing is a serious matter. Presentations, financial reports, business correspondence - they all demand a printer that actually supports the importance of any document. With the EPSON STYLUS C70, total print dependability is the key. It's a dependability built on the printer's speed, intelligence, print durability and precision.



Speed, Intelligence, Print durability and Precision.

\$429.00

Websearch Code ...EP5467

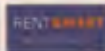
Stylus Photo 810

The STYLUS Photo 810 packs a powerful punch for any printing need. This printer comes with EPSON's photo manipulation software, PhotoQuicker 3.0, and together with the design specifications meets the exacting requirements of high quality photographic printing. The ideal printing solution for all enthusiastic photographers.



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Canon s100sp



Prints upto 5 crisp pages per minute. Up to 720 x 360 dpi print resolution. Cost saving separate black and tri colour ink tanks. USB Interface for Windows and mac (parallel not supported). Banner and poster printing. Easily converts to a high capacity black and white printer. Dual ink drop sizes for fine print. Internet Image Optimiser Technology.

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Websearch Code - 189527

Canon s200sp



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\$169

Websearch Code - 189898

Canon s300



MicroFine Droplet Technology. Up to 7.5 colour pages per minute. Smooth tonal gradations in low density colour areas. Up to 11 black and white pages per minute. Colour last up to 25 years. Resolution up to 2400dpi. High speed modes also reduce ink consumption. Exceptional operating economy. USB for PC or Mac (parallel not supported).

\$218

Websearch Code - 189522

Canon s520



Prints upto 14 black and white pages and 9 colour pages per minute. Up to 2400 x 1200 print resolution. Colour lasts up to 25 years using Canon's Photo Paper Pro. Creates prints without borders upto A4 size. Superb quality with 5 picolitre ink droplets. Connect to PC and Mac. Replace all four ink tanks individually.

\$399

Websearch Code - 189928

Canon s750



Print Up to 20 pages per minute in mono fast mode. Up to 2400 x 1200 print resolution. Print full-bleed A4 photos. Advanced Micro-Fine Droplet Technology. Connect to a PC or Mac. Print photos that last up to 25 years using Canon's Photo Paper Pro. Use high speed, high quality default mode printing.

\$485

Websearch Code - 189900

Canon s820



Print Up to 2400dpi using 6 intelligent individual photo-ink tanks with optical low-ink sensing. 4 picolitre drops and 49 tonal levels with no visible grain. Vivid Photo image enhancement, borderless photo-prints to A4 size, includes ZoomBrowser, PhotoStitch, PhotoRecord and 3D PhotoPrint software suite. USB for PC or Mac.

\$575

Websearch Code - 189921

Canon s900



- Up to 7 pages per minute
- Up to 2400 x 1200 print resolution
- Colour lasts up to 25 years using Canon's Photo Paper Pro
- Full bleed photo printing
- 4 picolitre ink droplets
- Replace all six ink tanks individually

Produce a high quality A4 photo in around 1 minute.

\$795

Websearch Code - 189901

Canon s6300



Up to 17 black and white pages per minute. Up to 2400 x 1200 print resolution. Print sizes up to A3+. Create A3 borderless photos using A3+ paper. Connect to a PC or Mac. Combine speed, quality and economy with new fast mode. Print Photos that last up to 25 years.

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Websearch Code - 189902

Canon s9000



- Up to 6 pages per minute
- Up to 2400 x 1200 print resolution
- Colour lasts up to 25 years using Canon's Photo Paper Pro
- Create full-bleed A3 borderless photos
- Connect to a PC or Mac
- Replace all six ink tanks individually
- Produce a high quality A3 photo in around 2 minutes

\$1049

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Canon MPC100



Full colour printing, scanning, copying, faxing and PC-faxing in one high quality, space saving design.

\$599

Websearch Code - 189920

Canon D1250U2



Offers high image quality and performance. Incorporating a 1200x2400dpi Hyper CCD with 48-bit internal colour depth. Ensures accurate colour reproduction with high-resolution documents and photo scans. Combined with automatic colour balance optimisation, clear, high quality scans are always achieved.

\$218

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Canon D1250U2F



Negative film scanner!
Canon's scanning expertise is now combined with the rapid transfer rates of the USB 2.0 Interface, to ensure super fast delivery of your scans, up to four times faster than USB 1.1. Also features 1200 x 2400 dpi high resolution and 48-bit colour depth for accurate colour reproduction and pin sharp detail on all your scans.

\$345

Websearch Code - 189905

Canon PowerShot A30

1.2 MegaPixel 3x Zoom Digital Camera. Entry-level 3x optical zoom, 1.2 MegaPixel CCD digital still camera. Includes advanced features and functions including movie and Photo Effect Modes. Uses standard AA batteries with optional recharger and batteries available, includes USB (only) PC & Mac interface cable, Canon software utilities for Macintosh and Windows and 8MB CompactFlash memory card.

\$595

Websearch Code - 189918



Canon PowerShot G2B

4.0 MegaPixel image quality plus Professional Performance. Includes 3x optical zoom lens, photo effect modes, manual modes for focus, exposure and white balance. High speed selectable three point Auto Focus, six preset white balance options, vari-angled LCD monitor, Optical View movie mode, built-in flash and hot-shoe for external flash unit, 32MB CF Card plus software for Windows and Macintosh.

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Websearch Code - 189919



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906 Grey

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DESKS & WORK STATIONS



812 B&H

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Dimensions
H1437 x W1231 x D530

\$179.00

DESKS & WORK STATIONS



S800 BEH

Combined desk & hutch, 15-CD rack. Pull-out scanner/keyboard shelves.

Dimensions
H1305 x W1005 x D500

\$169.00

DESKS & WORK STATIONS



303B/303H

Desk hutch combination, drawer slide-out ergonomic keyboard shelf reversible & height adjustable assembly. 20-CD rack, open storage shelves.

Dimensions
H785 x W1220 x D596

Hutch
H596 x W1180 x D296

\$269.00

DESKS & WORK STATIONS



305B/303H

All-in-one computer desk 20-CD rack. Storage cupboard with door, open shelving.

Dimensions
H785 x W1220 x D596

Hutch
H596 x W1180 x D296

\$349.00

HOME-OFFICE SUITES



1000B/1010H

Multiplex desk with adjustable shelves pull out keyboard & scanner/print shelves.

Dimensions
H760 x W1490 x D700

Hutch
H612 x W1490 x D350

\$445.00

Accessories not included

MODEL	WEIGHT	NSW Inc GST	QLD Inc GST	VIC Inc GST	WA Inc GST
906	28kg	\$18	\$36	\$36	\$45
812	45kg	\$24	\$48	\$48	\$62
S800	35kg	\$21	\$41	\$41	\$52
303B/303H	47kg	\$24	\$49	\$49	\$64
305B/303H	51kg	\$25	\$52	\$52	\$68
1000B/1010H	68kg	\$30	\$64	\$64	\$85
ESN2DR	25kg	\$18	\$34	\$34	\$42
ESN3DR	30kg	\$19	\$38	\$38	\$47

Click here to buy . . .

www.iswh.com.au



graphire™

Input for your imagination

Graphire2

Graphire2 is for anyone who wants to get more from their photos. Have fun moving people around in photos, colorizing old black-and-white images, or just cleaning up scratches and imperfections.

Graphire2 includes:

- The Graphire2 Pen, complete with programmable DuoSwitch, built-in eraser and 512 levels of pressure sensitivity.
- The Graphire2 tablet with removable pen stand and transparent overlay for easier tracing.
- Corel Painter Classic and Expression2Lite - so you can edit your favorite photos, or simply draw and paint on your computer.
- The three-button cordless, ball-free Graphire2 Mouse complete with fingerwheel. (Optional extra)

System requirements

PC- Windows 98, 2000, Millennium or XP.

Mac- iMac or PowerMac with Mac OS 8.5, 9 or 10.1.

Mouse sold separately.

WACOM

Graphite	Sapphire Blue	Silver	Graphire 2 4x5 With Mouse
\$165.00	\$165.00	\$165.00	\$215.00
Websearch Code189277	Websearch CodeWAC040	Websearch CodeWAC038	Websearch CodeWAC039

CREATIVITY

Adobe Photoshop 7

The professional image editing standard, helps you work more efficiently, explore new creative options, and produce the highest quality images for print, the Web, and anywhere else. Create exceptional imagery with easier access to file data streamlined Web design faster, professional quality photo retouching and more.



\$1449.00

Websearch WIN189936
Websearch MAC189937

Painter 7

Captures the real painting experience. New watercolor and Liquid Ink technologies are highly interactive and lifelike. Plus, Adobe Photoshop compatibility, along with hundreds of brush types, art materials and textures, gives you unlimited creative options.



Upgrade Win/Mac
\$485.00

Websearch COR605/607

Full Product Win/Mac
\$829.00

Websearch COR604/606

intuos2

A revolution in high speed digital tablet systems

Dramatically improve the performance and feel of working with print and web images - even for the one in every three Photoshop users who are already using a tablet.

Intuos2 improves the ergonomics of pressure sensitive pen input. The Intuos2 Grip Pen even comes with an extra rubber grip that enables you to remove the DuoSwitch if you prefer. Intuos2 Grip Pen features 1024 levels of tip and eraser pressure, tilt angle and direction, and two side buttons that act as modifier keys, keystrokes, or mouse buttons. Intuos2 bundles Corel Painter Classic and Expression 2 Lite. Painter Classic features over 40 pressure sensitive Natural Media tools that give you the power to draw and paint with realistic oil paints, chalks, pastels, colored pencils - even watercolors!

Mouse sold separately.



WACOM

USB 4x5	USB 6x7 (incl. 40 Mouse)	USB 12x12
\$399.00	\$849.00	\$849.00
Websearch Code189279	Websearch Code137833	Websearch Code189268

COMPUTER PRODUCTS AT ROCK BOTTOM PRICES!!!

PORTABLE DIGITAL ACCESSORIES

Belkin Leather Flip Case iPAQ

Made of Fine Grain Leather, form fitting pocket secures iPAQ while providing slots for business and credit cards. Secure snap fastening.

**\$45.00**

Websearch Code ...189622

Belkin Universal PDA Cleaning Kit

Specially formulated fluid creates a protective layer. Includes 10 lint free wipes, plus a reusable micro-fiber cleaning cloth & portable case.

**\$28.00**

Websearch Code ...189629

Belkin Sync Charger (USB) iPAQ

Charges and synchronises your iPAQ via USB plus bonus Cigarette Lighter Adapter.

**\$45.00**

Websearch Code ...189623

Palm m100

Take control with the Palm™ m100 handheld.

Entry level handheld PC. 2MB memory, advanced LCD with backlight, Palm OS 3.5, Address Book, Date Book, Clock, To Do List, Memo Pad, Note Pad and Calculator. Infrared transfer - accept & transmit information from any other IR enabled Palm OS handheld. Product contents: Palm m100 handheld, Hotsync cable, 2 AAA alkaline batteries, CD-ROM, Getting Started Guide, Stylus, Protective Flip cover.

**\$235.00**

Websearch Code ...USR153

Palm m130

Flip open the cover, and you'll find a backlit, easy-to-read display with support for more than 65,000 colours. Games and photos never looked so good. Convenient rechargeable battery. Built-in lithium-ion battery automatically recharges in your HotSync® cradle. With normal use, it will last for up to a week between charges. Expandable to grow with your needs. Add games, applications, eBooks and more on MultiMediaCard and SD expansion cards. Snap an MP3 player, portable keyboard or GPS receiver to the Palm Universal Connector. It couldn't be easier to extend the capabilities of your handheld.

**NEW****\$679.00**

Websearch Code ...189798

RentSmart \$7.44 pw

Compaq iPAQ Pocket PC H3850

Allows users to add CompactFlash memory cards and PC Card modems, among other accessories. Ships with a screen-cover sleeve, a welcome improvement over the black slipcover that comes with other iPAQs. Also, gamers will be glad to know that the buttons below the screen can now recognize two simultaneous button presses. This is vitally important when playing games that require you to move and fire at the same time.



Dimensions: 8.4cm x 1.6cm x 13.3cm
Weight: 200 grams
Memory: 32 MB flash

Warranty: 1 year warranty
Operating System: Microsoft Pocket PC 2002

Display: 3.8" TFT active matrix
RAM: 64 MB SDRAM
Processor: SA-1110 206 MHz Intel

\$1379.00

Websearch Code ...COM201

RentSmart \$15.12 pw

Palm m105

Internet capable handheld PC. 8MB memory, advanced LCD with backlight, Palm OS software 3.5, Address Book/Date Book/Clock/To Do List/Memo Pad/Note Pad/Calculator. Infrared transfer - accept & transmit information from any other IR enabled Palm OS handheld. Product contents: Hotsync cradle, 2 AAA alkaline, CD-ROM (Palm Desktop Software for PC and Mac, Mobile Internet Kit. Link to Microsoft Outlook, AvantGo Software), Getting Started Guide, Stylus and Protective Flip cover.

**\$339.00**

Websearch Code ...USR150

Palm m500

Travel light, Expandable, Internet-capable.

Internet capable handheld PC. 8MB memory, advanced high contrast LCD with backlight, Palm OS software 4 (enhanced security and internet connectivity), Address Book/Date Book/Clock/To Do List/Memo Pad/Note Pad/Calculator, Secure Digital Multimedia Card Expansion Slot and Universal Connector, Infrared transfer capability and vibrating and LED alarms. Product contents: USB Hotsync cradle with battery charger, Palm Desktop software, Palm Mobile Connectivity software, Documents to Go 3, MGI PhotoSuite Mobile Edition, Avant Go, Pocket Mirror 3, Palm Reader, and Multimedia SE.

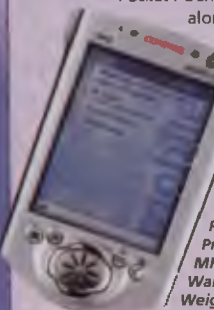
**\$749.00**

Websearch Code ...USR501

RentSmart \$8.21 pw

Compaq iPAQ Pocket PC H3760

Slim and Powerful - Sleek, elegant design, brilliant colour TFT screen, fastest available processor. Expandable, Versatile - iPAQ Expansion Packs provide an extraordinary array of functionality. Forward-reaching - Pacesetting iPAQ Pocket PC showcasing Microsoft Pocket PC 2002. Designed to ride along on the voyage of life - in your pocket or mounted to your mountain bike. It's not much bigger than a calculator and comes standard with applications like Microsoft Pocket Word, Excel, Outlook, Internet Explorer, and Windows Media Player.



Dimensions (WxDxH): 8.4cm x 1.6cm x 13.0cm
Memory: 32 MB flash

Operating System: Microsoft Pocket PC 2002
Display: 3.8" TFT active matrix

RAM: 64 MB SDRAM
Processor: SA-1110 206 MHz Intel

Warranty: 1 year warranty
Weight: 178g

\$1129.00

Websearch Code ...COM200

RentSmart \$12.38 pw

Palm m515

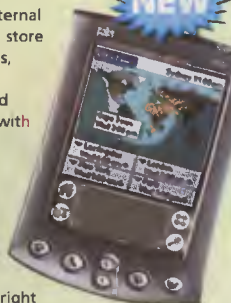
Brilliant, adjustable colour display. A new, brighter colour display offers outstanding readability with more than 65,000 colours and an adjustable backlight for maximum viewing control.

Plenty of room.

With 16MB of internal memory, you can store hefty applications, PowerPoint presentations and even video clips with room to spare.

Loaded with powerful programs.

Bonus software lets you view Word, Excel and PowerPoint files right on your handheld, send email, read eBooks, view video clips and photos, browse Web content offline and more.

**\$945.00**

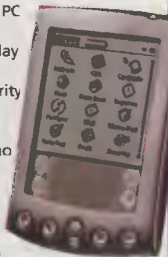
Websearch Code ...189917

RentSmart \$10.36 pw

Palm m505

Grow as your needs grow.

Internet capable handheld PC with colour display. 8MB memory, 16-bit colour display with backlight, Palm OS software 4 (enhanced security and internet connectivity), Address Book/Date Book/Clock/To Do List/Memo Pad/Note Pad/Calculator, Secure Digital Multimedia Card Expansion Slot and Universal Connector, Infrared transfer capability, and vibrating and LED alarms. Product contents: USB Hotsync cradle with battery charger, Palm Desktop software, Palm Mobile Connectivity software, Documents to Go 3, MGI PhotoSuite Mobile Edition, Avant Go, Pocket Mirror 3, Palm Reader and Multimedia SE.

**\$867.00**

Websearch Code ...USR502

RentSmart \$9.50 pw

Experience the AG Neovo Difference

Only a TFT Flat Panel Display from AG Neovo features the Crystal Optical Filter, both enhancing viewing angles up to 160 degrees and protecting the LCD panel from accidental damage, ensuring you get many years of quality use from your investment.



AG Neovo F-15 TFT LCD Display

Looking for the best image quality and style on a conservative budget, you can't go past the AG Neovo F-15 15" TFT LCD Display. With a bright 15" XGA TFT LCD screen and fantastic image quality the F-15 provides sharp images and accurate colour representation. The Neovo F-15 is the perfect display when upgrading your existing CRT monitor.

* Does not have Neovo Crystal Optical Filter

- 15" viewable XGA TFT active matrix LCD screen
- 300:1 Contrast Ratio
- 16.7 Million Colours 18-bit interface
- 140° viewing angles
- OSD menu with one touch auto adjustment
- 3 yr warranty
- Win/Mac

\$1199.00

Websearch Code189311

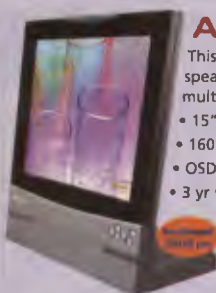
AG Neovo S-15V TFT Flat Panel Display

Put the highest quality and styling on your desk with this 15" Neovo TFT Display. The S-15V can be connected to a multitude of devices. With XGA, Composite and S-video inputs you can connect to a DVD, VCR, Camera or even the optional Neovo TV Tuner with remote control.

- PC Authority Recommended Award Sept 2001
- 15" viewable XGA TFT active matrix LCD screen
- 400:1 Contrast Ratio
- 16.7 Million Colours 18-bit interface
- 160° viewing angles
- S-Video & Composite inputs
- OSD menu with one touch auto adjustment
- Neo V Technology (Crystal Optical Filter)
- 3 yr warranty
- Win/Mac

\$1699.00

Websearch Code189312



AG Neovo M-15V TFT Flat Panel Display

This 15" TFT LCD Display from AG Neovo provides full multimedia capabilities with XGA, S-Video & Composite inputs, stereo speakers and a 4 port USB hub. With Sharp images and accurate colour representation, the Neovo M-15V is your best choice for a multimedia display.

- 15" viewable XGA TFT active matrix LCD screen
- 400:1 Contrast Ratio
- 16.7 Million Colours 18-bit interface
- 160° viewing angles
- S-Video & Composite inputs
- Stereo Speakers with Audio In/Out
- OSD menu with one touch auto adjustment
- Neo V Technology (Crystal Optical Filter)
- 3 yr warranty
- Win/Mac

\$1899.00

Websearch Code189313

AG Neovo X-174 TFT Flat Panel Display

The AG Neovo X-174 Display provides a generous 17.4" viewable XGA TFT active matrix LCD screen with the highest image quality and styling. Only Neovo have a Crystal Optical filter which will protect your display and your investment from accidental damage to the LCD membrane. With sharp images and accurate colour representation, the Neovo X-174 is the perfect partner for high quality crisp images and sharp text.

- Awarded APC Best Display of 2001 - Nov 2001
- 17.4" viewable XGA TFT active matrix LCD screen
- 400:1 Contrast Ratio
- 16.7 Million Colours 24-bit interface
- 160° viewing angles
- S-Video & Composite inputs
- DVI-D (digital interface)
- OSD menu with one touch auto adjustment
- Neo V Technology (Crystal Optical Filter)
- 3 yr warranty
- Win/Mac

\$3099.00

Websearch Code189314



AG Neovo S-18 TFT Flat Panel Display

When quality, performance and price are your only concerns, the S-18 from AG Neovo has it all. Connect via XGA, Composite or S-Video, or for true digital graphics the S-18 features DVI connectivity. The AG Neovo S-18 Display provides an enormous 18" viewable XGA TFT active matrix LCD screen with the highest of image quality and styling. With sharp images and accurate colour representation the Neovo S-18 is the perfect TFT display for current 20"/21" CRT users.

- 18" viewable XGA TFT active matrix LCD screen
- 300:1 Contrast Ratio
- 16.7 Million Colours 24-bit interface
- 160° viewing angles
- S-Video & Composite inputs
- DVI-D (digital interface)
- OSD menu with one touch auto adjustment
- Neo V Technology (Crystal Optical Filter)
- 3 yr warranty
- Win/Mac

\$3699.00

Websearch Code189315

Wireless RF Neovo Keyboard & Mouse


\$339.00

Websearch Code189316

Wall Mount Bracket


\$89.00

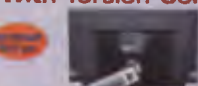
Websearch Code189317

External TV Tuner Frame with Remote Control


\$398.00

Websearch Code189317

Wall/Desk mount ARM with Torsion Control


\$599.00

Websearch Code189318



INTERNATIONAL SOFTWARE WAREHOUSE

EVERYTHING FOR YOUR PC - DELIVERED AUSTRALIA WIDE



CONNECTIVITY

Iomega® Predator 24x10x40x

External USB 2.0 CD-RW drive boasts higher speeds due to higher throughput of USB 2.0. This drive is also compatible with USB 1.1, which limits the drive speeds to 4x4x6. It includes all the hardware and industry-leading software you need to easily and very quickly burn CDs. Comes with Iomega HotBurn CD mastering software, MusicMatch Jukebox, and Adobe ActiveShare for PC. Product also includes USB data cable, audio cable, external power supply, one CD-R disc, and quick install manual.

Note: This product does not include a hi-speed USB 2.0 card necessary to achieve full 24x10x40 speeds. This card for the computer must be purchased separately or comes as part of the original computer hardware.



\$549.00

Websearch Code 189323

Iomega® Zip 100mb USB Host Powered

The Universal Serial Bus (USB) technology is the emerging standard for connecting anything to your computer. This state-of-the-art interface makes good on the long-touted promise of simple plug-and-play capability, moving beyond traditional limitations and annoyances of the SCSI or parallel port interfaces. Now, USB-equipped Macintosh and PCs running Microsoft Windows 98 can begin utilizing USB advantages.



\$189.00

Websearch Code...IOM151

Netgear MA301

Wireless PCI Adaptor

NETGEAR's MA301 802.11b Wireless PCI Adaptor enables you to easily network all of your employees at 11 Mbps speed without installing any new wires. (An MA401 Wireless PC Card is required and is sold separately.) Set up a new wireless network or extend your existing workplace to remote sites in your building in no time, and escape the hassles and expense of Ethernet cabling. Your workforce can immediately use your wireless network to access e-mail, file servers, printers, and cable/DSL Internet access.



\$109.00

Websearch CodeNET218

Netgear MA101

Wireless USB Adaptor

With NETGEAR's MA101 802.11b Wireless USB Adaptor you can easily network all of your employees at 11 Mbps speed without installing any new wires. Since the MA101 is USB powered, there is no need to open the case of the PC. Set up a new wireless network or extend your existing workplace to remote sites in your building in no time, and escape the hassles and expense of Ethernet cabling. Your workforce can immediately use your wireless network to access e-mail, file servers, printers, and cable/DSL Internet access.



\$249.00

Websearch Code 189777

Netgear ME102

Wireless Access Point

NETGEAR's ME102 802.11b Wireless Access Point gives you wireless mobile workforce continuous, high-speed 11 Mbps access to corporate network resources, e-mail and the Internet. It helps you quickly set up a new wireless network office or extend your existing Ethernet network to remote locations in your building without the time or expense of Ethernet cabling.



\$549.00

Websearch CodeNET220

Netgear MR314

Wireless Router

NETGEAR's MR314 Cable/DSL Wireless Router with 4-port switch and access point offers the easiest way to share and extend your high-speed DSL/cable modem Internet connection, either with or without wires. This high performance IEEE 802.11b standards-based router connects all of your PC's equipped with wireless PC cards, while an integrated 4-port switch connects your devices that need Ethernet wiring.



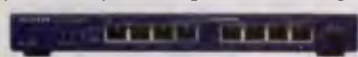
\$619.00

Websearch CodeNET228

Netgear 10/100 Dual Speed 8 Port Hub (FS108)

Brings the 100 Mbps switching technology and simplifies it for the small office marketplace.

Provides a cost effective way to instantaneously boost network performance while preserving your network infrastructure, including installing cabling and desktop and hardware. Since each port is auto-speed-sensing, installation is plug



and play and each connection can easily be upgraded from 10 to 100 Mbps.

\$239.00

Websearch Code ... NET157

Netgear RP114

Router

NETGEAR's RP114 Cable/DSL Web Safe Router with 4-port switch provides you with multiple Web content filtering options, plus browsing activity reporting and instant alerts via e-mail. Parents and network administrators can establish restricted access policies based on time-of-day, URL and URL keywords while sharing high-speed cable/DSL Internet access.



\$359.00

Websearch CodeNET237

Netgear FA311

Network Card.

All major operating systems are supported 10/100 Mbps auto-sensing capability Use it in future 3.3-volt PCI systems, and in 5-volt PCI systems. Robust! NETGEAR's single chip design improves the reliability of your network card performance. And you'll be prepared for the future with both 3.3v PCI and low-profile PCI capability no upgrades required.



\$45.00

Websearch CodeNET214

Netgear PS110

Print Servers.

NETGEAR print servers enable you to connect printers to the network for sharing among multiple PCs. Compared to attaching a printer to your PC, the print server gives you more flexibility in placing the printer, more cost effectiveness, better performance, and simultaneous support for Windows, Netware, and UNIX printing. The PS104 print server is ideal for a home office with a few PCs. The PS110 is ideal for a small business or small office with a 10 or 100 Mbps network.



\$279.00

Websearch Code189755

Netgear PCMCIA Wireless PC Card

NETGEAR's MA401 802.11b Wireless PC Card for notebook computers provides mobile 11 Mbps access to corporate resources, e-mail and the Internet, and quick connectivity without Ethernet cabling. It safeguards your network, and performs with most airport and hotel wireless Internet services, supports.



\$199.00

Websearch CodeNET219

Netgear R0318

Security Router.

NETGEAR's sturdy metal R0318 Cable/DSL Security Router with 8-port switch fully protects your small office network against intrusion. Equipped with Stateful Packet Inspection to prevent Denial of Service (DoS) attacks, and Network Address Translation (NAT) to maintain network security against hackers, it ensures prolonged "up" time and maximized productivity for your network.



\$559.00

Websearch Code130735

Netgear GA302T

Gigabit Adapter.

Network traffic slowdowns are history once you install NETGEAR's GA302T Copper Gigabit Adapter. It operates at 1000 Mbps using existing Cat 5 networking cables and boosts your connection speed with 2000 Mbps of full-duplex bandwidth over copper wiring. Auto UplinkT™ eliminates any need for crossover cables, and optimized drivers, demonstrated functionality within major Windows operating systems, and Plug and Play technology ensure trouble-free setup and performance.



\$175.00

Websearch Code189758

CONNECTIVITY

adaptec

Adaptec FireConnect PCI Kit

- 4-port Host Bus Adaptor, Hot Puggable Plug-and-Play Connectivity
- Supports up to 400 Mbps throughput.
- For Hi-speed Digital cameras, camcorders external Storage, CD-RW's & DVD-RW's
- Supports: Win98SE/ME/2000/XP and Mac OS 8.6 or later
- Includes Firewire cable and Digital Video Editing software for Windows



\$145.00
Websearch Code . . . 189511

Adaptec USB 2.0 Connect CardBus Kit

- 2-port Host Bus Adaptor, Hot Puggable Plug-and-Play Connectivity
- Supports up to 480 Mbps throughput, Up to 40x faster than USB1.1!
- For Hi-speed Hi-definition printers & External CD-RW's
- Supports: Win98SE/ME/2000/XP and Mac OS 8.6 or later
- Includes USB2.0 cable, Latest Drivers and USB2.0 utilities available On-line



\$195.00
Websearch Code . . . 189512

Adaptec DuoConnect USB 2.0/1394 PCI combo card Kit

- 7-port Host Bus Adaptor, 4-port USB 2.0 and 3-port FireWire (1x USB 2.0 Internal & 1x FireWire Internal).
- Hot Puggable Plug-and-Play Connectivity
- USB2.0 - up to 480 Mbps throughput, Up to 40x faster than USB1.1!
- FireWire - up to 400 Mbps throughput.
- Supports: Win98SE/ME/2000/XP and Mac OS 8.6 or later.
- Part: ADA0004



\$275.00
Websearch Code . . . 189513

Adaptec FireConnect CardBus Kit

- 3-port Host Bus Adaptor, Hot Puggable Plug-and-Play Connectivity
- Supports up to 400 Mbps throughput.
- For Hi-speed Digital cameras, camcorders external Storage, CD-RW's & DVD-RW's
- Supports: Win98SE/ME/2000/XP and Mac OS 8.6 or later
- Includes Firewire cable and Digital Video Editing software for Windows



\$199.00
Websearch Code . . . 189513

Adaptec USB 2.0 Connect CardBus Kit

- 4-port (1 internal) Host Bus Adaptor, Hot Puggable Plug-and-Play Connectivity
- Supports up to 480 Mbps throughput, Up to 40x faster than USB1.1!
- For Hi-speed Hi-definition printers & External CD-RW's
- Supports: Win98SE/ME/2000/XP and Mac OS 8.6 or later
- Includes USB2.0 cable, Latest Drivers and USB2.0 utilities available On-line



\$119.00
Websearch Code . . . 189514

Adaptec 4 Port USB 2.0 Adapter

- Features fully powered ports & stackable with additional units
- Advanced industrial design
- Includes built-in picture frame, cable and stand with cable management



\$189.00
Websearch Code . . . 189515

Microsoft Office XP Professional Special Edition Upgrade

Available only for a limited time, Microsoft Office XP Professional Special Edition Upgrade includes the core programs in MS Office Suites, plus more to make your life much easier.

Includes the great features of:

- MS PowerPoint 2002
- MS Access 2002
- MS Word 2002
- MS Outlook 2002
- MS Excel 2002
- MS FrontPage 2002
- MS Publisher 2002
- MS IntelliMouse Explorer



\$444.00
Websearch Code . . . MS5663



INTERNATIONAL SOFTWARE WAREHOUSE

EVERYTHING FOR YOUR PC - DELIVERED AUSTRALIA WIDE



STORAGE

Pioneer DVD-R MEDIA

PIODVS-R470SDF - 4.7GB DVD-R in Jewel case, Suitable for DVD Video & Data backup. Playable on both DVD-Video players & DVD-ROM drives



\$19.45
Websearch Code ...189948

Pioneer DVD-RW MEDIA

PIODVSRW47B - 4.7GB DVD-RW in Jewel case
DVD-RW Rewritable Media is suitable for data that needs to be changed.

These discs can be erased and re-written. Playable on both DVD players and ROM drives.



\$28.00
Websearch Code ...189948

Opening Hours

Sales lines open:
8.30am until 5.30pm (EST)
Monday to Friday
(except Wednesday 9.00am until 5.30pm)

Pricing

All orders are invoiced inclusive of GST. Prices are subject to change & product availability.*

* See our Terms & Conditions on page 2.

Pioneer

Pioneer DVR-A04 DVD-R/RW Writer

Pioneer now provides wider compatibility, higher speeds, lower noise and UDMA33 support. Plus, it can be installed vertically and its depth has been shortened. This means it can now be installed in more types of PC's.

Higher speed performance: The higher the quantity of data, the more important recording speed because the DVR-A04 can record at 24X for DVD-R (roughly equivalent to 18X CD-R), you can finish recording in a short time. And now it supports High Speed CD-RW media recording at 4X. What's more, read speed has been boosted to 6X for DVD (single layer) and 24X for CD-R/RW and CD-Audio Extraction.

The DVR-A04 prevents buffer underruns for both DVD and CD media through the use of a unique Loss-less Linking scheme. This saves both time and money by eliminating the most likely cause of wasted media.



Pioneer DVR-A04

DVD-R/RW/CD-R/RW:
Includes writing, authoring & video editing software, PowerDVD 4.0, movie vouchers, pen. Win.

Pioneer DVR-A04FW

DVD-R/RW/CD-R/RW:
DVR-A04P + FireWire card/cable, DVDIt! PE authoring software. Win.

Pioneer DVR-A04PRO

DVD-R/RW/CD-R/RW:
DVR-A04P + ReelDVD professional authoring software. Win.

* ArcSoft ShowBiz video editing software is now included with all DVR-A04 kits.

DVR-A04
\$995.00
Websearch Code ...189938

DVR-A04FW
\$1249.00
Websearch Code ...189945

DVR-A04PRO
\$1745.00
Websearch Code ...189946

DVD-ROM Upgrade Kit PIODVDA06SZ - 16X Slot Loading IDE DVD-ROM Drive Kit - includes mounting accessories, PowerDVD software decoder & 5 Blockbuster DVD movie rental vouchers. Win.

\$169.00
Websearch Code ...189947

Pioneer DVD-ROM PIODVDA06SZ PowerDVD XP 4.0



Now
Supporting
OS X

roxio

Roxio Toast 5 Titanium For Mac

Creates music, data & video CDs. Toast Includes: CD-ROM with CD Spin Doctor, Qdesign MVP, iView Multimedia, Magic Mouse Discus, Toast Audio Extractor, Roxio Bonus CD with MP3 songs, video clips and 4 short films. User Guide, cable to connect a computer to a stereo system's Lineout.



\$179.00
Websearch Code ...ATOAST



Burn your World on CD!



roxio

Roxio Easy CD Creator 5 Platinum

Access music on the Internet. Fine tune your music tracks. Edit and enhance photos and videos with a pro's touch. Includes: CD with Sound Stream 2, DirectCD, Spin Doctor, CD Copier, Ideal-impression, Photo Album, Video Postcard, VideoCD Creator, CD Label Creator, Sound Editor, Session Selector, Web CheckUp.



\$125.00
Websearch Code ...EASYCD



Burn Your World On CD!



Pinnacle Studio DV

With the Studio DV range you can take Hollywood home!

Pinnacle Studio DV and your creativity are all you need to turn your home movies into masterpieces. Studio DV is a complete solution combining award winning software with a DV/Firewire video capture board. The Pinnacle Studio software combines a simple drag and drop interface with professional features like:

- Captures 1 hour of video in only 150MB of disk space (Smart Capture)
- Add titles, narration, transitions
- Movie of any length (no 2Gb production limit)
- Output to tape
- Frame capture
- Slow / Fast Motion (except the Clip version)
- Works with ALL DV / Digital 8 camcorders
- Includes Hollywood FX for Studio for fantastic 3D transitions (Studio DV ver7, Studio DV+ ver 7 only)
- Output to MPEG1/2, WEB, VCD, SVCD and DVD (Studio DV ver7, Studio DV+ ver 7 only)
- Output to VHS and SVHS (Studio DV + only)

Pinnacle Express

Express is a new generation of software that will allow you to convert your home movies filmed with a Digital Camcorder onto a CDR or even a DVD R/RW. Create Video CDs or DVD Videos both compatible with most home DVD Players. Capture your video from your DV camcorder.

Create CDs or DVDs for your DVD player. Detects each scene on your DV tape and create an interactive menu that can be customized up to one hour onto a CD at VHS quality (VCD), 1/2 Hour at SVHS quality (SVCD) or 15 minutes at DVD quality (mini DVD onto CD). Compatible with most DVD players (all JVCs and Philips are 100% certified incompatible with early DVD players that does not support CDR Media) Requires a CDRW or DVD RAW, and a Firewire port to connect to your camcorder.



\$129.00
Websearch Code .PIN040

Pinnacle Studio 7

Simply the best movie-making software available today. Made by the same people who've won seven Emmy Awards creating video-editing gear for the Hollywood pros. Studio 7 lets you turn your home movies into Hollywood masterpieces. Now with Studio 7.0 software, anyone with a FireWire card or other PC video capture hardware can take advantage of it's great features to make amazing video. Software only.



Upgrade
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Pinnacle DV 200

Pinnacle DV 200 the fastest DV editing card

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- Pinnacle DV2 Codec for near real time or instant editing (expendable technology)
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- Adobe Premiere 6 Full version
- Adobe Photoshop LE
- Pinnacle Impression and Title Deko
- Hollywood FX Copper and Alpha Magic



Low Price
\$779.00
Websearch Code .130679



Studio DV Clip
Studio DV hardware
and Studio 7 SE

\$275.00
Websearch Code .PIN039

Studio DV ver 7
Studio DV hardware and
Studio 7 with HFX

\$379.00
Websearch Code .PIN038

Studio DV + Studio DV
hardware with VHS/SVHS
output and Studio 7 with HFX

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Websearch Code .PIN033



Pinnacle Studio Deluxe

Pinnacle introduces the first and only Analogue and Digital editing product for under \$1000 AU

- Capture, edit and output your videos from and to analogue and digital video sources
- Edit your videos with Pinnacle Studio 7 software
- Output to VHS, SVHS (through the break out box) or Digital 8 or miniDV (through Firewire connections)
- Create DVDs, VCDs, SVCDs with Pinnacle Express
- Comes with a break out box for easy connectivity
- Many new transitions with Hollywood FX Plus for Studio
- Compatible with XP, Windows 2000, Windows 98 and Me



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Websearch Code .189637

Pinnacle Studio DC10+version 7

Pinnacle Studio DC10+ version 7 and your creativity are all you need to turn your home movies into masterpieces. Studio DC10+ version 7 is a complete Solution combining award winning Pinnacle Studio video editing software, with a Hi 8 and VHS video capture and output board. The Pinnacle Studio software combines a simple drag and drop interface with professional features, like fast/slow motion, custom audio, over 100 transitions including Hollywood FX 3D effects, advanced color correction, contrast and brightness control, and more.



\$449.00
Websearch Code .PIN042

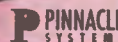
DV500 PLUS

DV500 PLUS is the ONLY real-time editing solution which takes advantage of features such as:

- Real-time multi-track audio mixer
- Real-time 16:9 widescreen effects, transitions and titles
- TitleDeko RT with video output for title creation previews
- Real-time image correction for colour and brightness controls
- Export to VCD and SVCD
- Adobe Premiere 6
- Adobe Photoshop LE
- Pinnacle Impression DC-Pro
- Pinnacle Hollywood FX Copper
- Pinnacle Hollywood FX Alpha Magic
- Pinnacle Instant Video Technology



Low Price
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MULTIMEDIA

Pinnacle Studio ONLINE

Share your video on the WEB!

Edit your videos using this USB to Video cable, add titles and sounds with the Studio software. Once finished, by the click of a button, upload your video to the Studio online web site and allow your friends and family to view them, thanks to Microsoft Media technology (MPEG 4). No need for download then just click on the link and the video will be streamed to your desktop wherever and whenever.



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Websearch CodeMS55/79

Microsoft Natural Keyboard Pro

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Legrand CRM is extremely easy to use and works directly with Microsoft Outlook, Excel and Word. It is a practical CRM system that delivers immediate benefits.

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2. Plan, produce and track marketing campaigns and then measure the results
3. Manage sales opportunities by personnel, territory or product and analyse past results
4. Maintain a group calendar of appointments and activities
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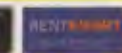
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- Manages your sales pipeline with forecasting tools and built-in reports
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- Provides action sheets for employees automatically outlining weekly and monthly objectives.
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- Gives you control of your company.



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- Makes Key Performance Indicator monitoring, reporting and analysis easy.
- Significantly reduces the time required to develop sophisticated KPI Scorecards.
- Extremely easy-to-use.
- Performance reports are instantly generated incorporating text, graphs and tables.
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- Based on world-renowned 'balance scorecard' management theories.



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MAUS Performance Review

- Save up to 90% of the time spent performing employee appraisals.
- Record day to day problems and accomplishments more efficiently.
- Includes Performance log, goals, critical incident reporting & ability to access the review documents.
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- Option to use a pre-designed review form or customise one to meet your needs.
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- Networkable.
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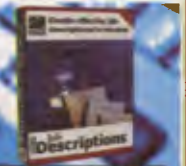
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BUSINESS

MAUS Job Descriptions

Create clear, concise job descriptions in minutes. Choose from over 3,500 customisable job descriptions selectable by job title or industry. Use the question and answer format to address physical and educational requirements, work environment, qualifications and supervisory duties.



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MAUS Project Planner

- Makes Managing projects easy
- Helps reduce costs, meet deadlines and use resources efficiently
- Creates instant reports & graphs
- Monitors costs, hours, resources and more
- Includes Gantt charts for "big picture" scheduling
- Easy to use
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- Links to MAUS Masterplan, MS Project, Word and Excel
- Creates instant action plans



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Websearch Code ... 18993E

MAUS MasterPlan

Award Finalist in the Telstra Small Business Show Software awards

For people who need a winning, professional Business or Marketing Plan, MasterPlan's simple step-by-step question and answer format enables you to construct full financials, text and graphics in no time at all! Sample plans, real life examples and a unique financial wizard will ensure you prepare a perfect plan every time.



AWARD FINALIST

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NEW

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MAUS Stockmarket Plus is an AWARD FINALIST in the Channel 9 SMALL BUSINESS SHOW SOFTWARE AWARDS and one of the biggest selling personal investment software tools in Australia. The application is a 4 in 1 Investment Software Tool. It handles shares, options, warrants, property, managed funds, fixed interest and a range of other investments with ease! NOW does Bonds and Debentures. Can now be used in conjunction with online bank accounts.



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MAUS Employee Manual

Create a handbook encompassing all of your organisations policies and procedures. The application covers issues such as holiday entitlement, employee benefits, employment contracts, recruitment, termination and much more through a simple to use question and answer format.



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MAUS Type Right

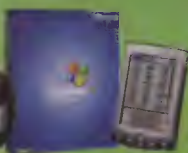
It takes you through the typing process step by step with fun tutorials and easy exercises. Specifically for people who are using keyboards and computers, so its approach is practical and relevant to today's office environment. Basic keyboard skills can be attained in 4-6 hours.



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Roxio Easy CD Creator 5 Platinum

Access music on the Internet. Fine tune your music tracks. Edit and enhance photos and videos with a pro's touch. Includes: CD with Sound Stream 2, DirectCD, Spin Doctor, CD Copier, ideal-mpression, Photo Album, Video Postcard, VideoCD Creator, CD Label Creator, Sound Editor, Session Selector, Web CheckUp.



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Websearch Code: EASYCD

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Crystal Reports allows you to create rich content from virtually any data source including XML, OLAP or relational. Add charts, drill-down, alerting, parameter prompts, and hyperlinks and turn reports into compelling, interactive documents or web content. And it's simple to deliver information the way you want in a variety of formats, including XML, DHTML, PDF, RTF and Microsoft Excel.

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Developer tools for Web and Windows developers with comprehensive support for development languages makes Crystal Reports the essential reporting tool for database applications. Build and freely distribute client-side applications that incorporate rich interactive reports, or create scalable client/server applications starting with the included 5 concurrent user license.

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New COM driver - This add-on allows you to write custom data access drivers using any development language that can create standard DLLs. Encapsulate business logic, perform complex calculations or simply abstract your data, then use the power of Crystal Reports for formatting, presentation and delivery.

New XML data access driver - This update to the XML data access driver improves support for XML sources, including accessing multiple XML data sources in a single report.

New VCL - supports Delphi 6.

New Excel export - now what you see in Crystal Reports is what you will see when exporting to excel with its improved images and colouring. It also supports data-only export.

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Powerful analysis for the Web

Crystal Analysis Professional provides easy-to-use interactive high-speed analysis for Microsoft SQL Server (OLAP) Services. It makes multi-dimensional data easy to understand, use and deploy - opening the power of interactive analysis to all.

Crystal Analysis Professional allows end users to easily create snapshots of multi-dimensional OLAP data, stored in MS SQL Server Analysis (OLAP) Services, including rich visualization techniques such as charting, which are then compiled into Excel-style Briefing Books for guided navigation and can be deployed to the Web. It is designed for ease-of-use, with a point-and-click design environment, requiring that interactive report designers have some knowledge of the data but little else.

The result delivers better value to organisations, as more people will now be able to access information from multi-dimensional OLAP data, and gain better insights to help decision-makers impact business performance.

\$749.00
Websearch Code: 111204



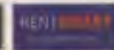
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FileMaker Server 5.5

The Database Server for Growing Workgroups

An easy-to-use relational database server is the best way to host your FileMaker Pro 5.5 solutions on Windows 2000, Mac OS X, Mac OS and Red Hat® Linux. This high-performance server engine supports up to 250 FileMaker Pro 5.5 guests simultaneously on multiple platforms with several protocol options and up to 125-hosted files. It includes automatic plug-in updating, scheduled backups and remote administration tools to monitor server activity and to control guest and file connections.



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FileMaker Mobile Companion for Palm OS

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Palm M105

To enter, complete you and your friend's contact details as outlined on the FileMaker web site at: <http://www.filemaker.com.au/promos/tellafriendpromo.html> or by phoning FileMaker Customer service Australia 1800 028 316. The promotion can be entered more than once. Offer begins at 9am on 11 February 2002 and concludes at 5pm on 30 June 2002. Entries received after the deadline will not be accepted. Entries will be accepted via the Web at <http://www.filemaker.com.au/promos/tellafriendpromo.html> or by phoning FileMaker Customer service Australia 1800 028 316 only. Entries received by other means will not be accepted. Entry is open to all residents of Australia and New Zealand other than employees of FileMaker, Inc. their immediate families and agencies. By providing FileMaker with your friend's details, we assume that you have received the permission of the third party and it is essential that their permission is gained prior to entering the promotion. FileMaker Inc's privacy policy is available at http://www.filemaker.com.au/legal/notice_privacy.shtml. ©2002 FileMaker, Inc. All rights reserved. FileMaker is a trademark of FileMaker, Inc. registered in the U.S. and other countries. All other trademarks are the property of their respective owners.

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ACCOUNTING

MYOB PocketAccounts

MYOB PocketAccounts, a handheld sales and time billing program that helps businesses with a mobile sales or consulting force improve their efficiency and cash flow.

MYOB PocketAccounts runs on a Palm OS device and links seamlessly with MYOB accounting software on the desktop, allowing users to synchronise their entire day's data at the push of a button.



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MYOB RetailManager replaces the cash register with a point-of-sale system that streamlines store operations, manages sales, stock, GST, staff and customers, and produces critical reports across a wide range of business activities.

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- Easy to use and understand
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- Stand alone or integrate with select MYOB software



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Made in Australia for Australian business conditions.

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MYOB provides a range of support options to help you make the most of your MYOB software, including 30 days of free telephone support, 24-hour live-based support, 24-hour email support, and a personal year-round support program, and a range of training options to help you or your employees get up to speed.

The business software family that'll always be there for you

Whatever the size of your business, MYOB offers a range of accounting and business management solutions to suit your needs. And if your business situation changes - through growth, legislation changes or technology advances - MYOB will be there for you.

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MYOB FirstAccounts v3.5

Basic accounting and business management
Ideal for tradespeople!

FirstAccounts is a basic first accounting system for small owner-operators who need to keep on top of their accounting obligations and want to add a business management edge - but without the expensive overheads of a full back office.

It's easy to understand and full of features that keep the amount of time you spend on your accounts to an absolute minimum. You don't get lost in the details, and you don't get tied to a desk - you just prompt your accounts and get straight back to running your business.

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- Streamline your accounts
- Understand your business
- Track your GST

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Websearch Code: MY0035

Upgrade

\$49.00

Websearch Code: MY0043



MYOB Accounting v11

Integrated business management

MYOB Accounting is for businesses that need to streamline accounts procedures and would benefit from improved inventory management, better management of customer and supplier relationships, and advanced business reporting.

- Streamline accounts procedures
- Comprehensive business management
- Powerful inventory management
- Contact management

Full Product

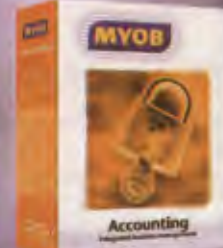
\$379.00

Websearch Code: MY0008

Upgrade

\$209.00

Websearch Code: MY0041



MYOB Accounting Plus v11

Business, payroll and time management
For employers

MYOB Accounting Plus is for businesses that need to streamline accounts procedures and would benefit from improved inventory management, better management of customer and supplier relationships, advanced business reporting, and automated payroll or time billing.

Fully integrated payroll

Process pays, PAYG and employee entitlements with a few mouse clicks - by cash, cheque or electronically.

Professional time billing

Automatically track the costs and closures of every business activity.

Full Product

\$519.00

Websearch Code: MY0035

Upgrade

\$269.00

Websearch Code: .130562



MYOB Premier v6

Powerful multi-user business management software

MYOB Premier is for businesses that need to streamline accounts procedures, whether through simplifying complex inventory issues, running an automated payroll, time billing, accessing advanced reporting or increasing productivity with multi-user access.

Premier's combination of productivity enhancing features will appeal to any business that has complex inventory requirements, works with more than one currency, or requires multi-user access.

"...you'll find it to be the most affordable and user-friendly multi-user software available, as well as coming with fantastic support, training and documentation."

- Australian PC World, June 1999

\$1099.00

Websearch Code: .189916

NEW



Click here to buy . . .

www.iswh.com.au



Business Planner Professional

For people who need to create winning and comprehensive business or marketing plans. The program steps you through the complete planning process section by section, it includes an on-line help system, proforma templates to build your plan quickly, in-built spreadsheet facilities and functions to allow "What if" scenarios. It also has an in-built, spellchecker, and comprehensive glossary of business and planning terms and financial ratios.



\$159.00
Websearch Code . . . 189302

Marketing & Sales Planner Professional

For people who need to create winning and comprehensive marketing and sales plans. The program steps you through the complete planning process. It includes an on-line help system, proforma templates to build your plan quickly, in-built spreadsheet functions and facilities to allow "What if" scenarios. It also has an in-built, spellchecker and comprehensive glossary of marketing and sales terms.



\$119.00
Websearch Code . . . 189305

Human Resource Value Pack

Has been developed with the small business operator in mind. It contains Human Resource Manager, a comprehensive HR planning and operations manager showing businesses how to recruit, train, develop and improve staff. It also contains hundreds of employee letters, employee agreements, employee forms, staff performance matrices, appraisal letters, hundreds of job descriptions and many more tools to meet the daily HR needs of the small businesses.



\$149.00
Websearch Code . . . 189309

Sales and Marketing Value Pack

Contains the award winning Marketing and Sales Planner and is complimented with over a hundred sample Marketing Letters and over a hundred Lead Generation and Relationship Letters. It will help drive your marketing strategy and sales campaigns, allow you to build winning customer relationships and loyalty programs and give you many sales and marketing techniques to build your business.



\$149.00
Websearch Code . . . 189307

Business Starter Value Pack

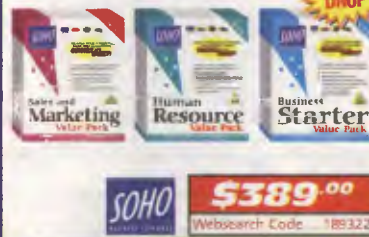
Has been developed especially for new startup businesses or established businesses that want to overhaul their business planning processes, policies and procedures while revamping their communications with staff, suppliers and customers. It contains the award winning Business Planner Professional and award winning Business Writer Professional - an essential tool for all businesses.



\$189.00
Websearch Code . . . 189321

SOHO Super Value Pack

• Marketing and Sales Planner • Marketing Letters • Lead Generation Letters • Human Resource Manager • Employee Letters and Agreements • Job Descriptions and Forms • Business Planner Professional • Business Writer Professional • Excellent value



\$389.00
Websearch Code . . . 189322

BUSINESS & LEARNING

Business Letter Value Pack

Contains over 600 Marketing Letters, Employee Letters and Agreements, Legal letters and Agreements Business 2 Business letters, Lead generation and relationship marketing letters. Never be lost for words with these award winning software products.



\$119.00
Websearch Code . . . 189306

Business Writer Professional

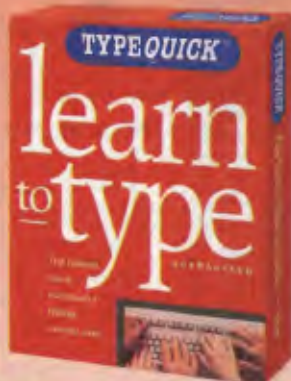
The complete business writing and reference tool for home offices and small businesses. It contains over 600 proforma and sample customer and supplier business letters, marketing and sales letters, business documents and forms, staff performance matrices, business agreements, employee agreements, legal letters, sample contracts and many more valuable tools.



\$99.00
Websearch Code . . . 189310

TYPEQUICK LEARN TO TYPE

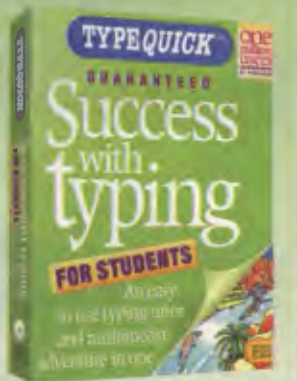
TYPEQUICK LEARN TO TYPE is the quick and easy way to learn to touch-type with ten fingers. You are guided through the course of ten comprehensive and enjoyable lessons in a planned and logical sequence, that takes you on the shortest path to learning. Each lesson builds on the skills learned in the previous lessons and at each step you are encouraged and motivated to continue. Typequick alternates between speed practice and accuracy lessons to improve your skills in both areas. The program also generates frequent reports to show you how well you are progressing. All Australian Typequick has earned the reputation of being the fastest course with the highest success rate over the last twenty years.



\$99.00
Websearch Code . . . 189751

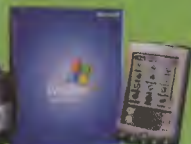
TYPEQUICK FOR STUDENTS

TYPEQUICK FOR STUDENTS is an animated, multimedia adventure designed to keep students entertained for the ten hours it takes to learn to touch-type with ten fingers. The program follows a cool koala character called 'Kewala' as he travels around Australia visiting new places and meeting new characters. The student is guided through the logically-planned and structured course that has short lessons and easy paragraphs of text. The compelling, interactive, multimedia story and text exercises are so much fun, students have no trouble finishing the course. Records are kept for each lesson making assessment easy. Recommended by teachers and loved by children.



\$99.00
Websearch Code . . . AU546

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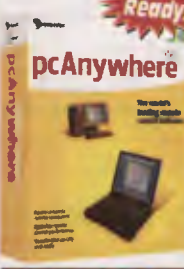
EVERYTHING FOR YOUR PC - DELIVERED AUSTRALIA WIDE



UTILITIES

pcAnywhere 10.5

pcAnywhere™ is the No.1 seller for fast, easy access to any PC. If you need to work from home or on the road, pcAnywhere lets you connect to your office PC to retrieve files or run desktop applications. If you're an IT professional, pcAnywhere lets you remotely support users and manage servers effectively. For Windows® 95/98/NT/2000/ME/XP



XP Ready!

\$245.00

Websearch Code: 189237

pcAnywhere 10.5

Small Business Solution
Includes 1 remote and 5 host licences
pcAnywhere is a comprehensive remote control and file transfer solution for telecommuters and IS/IT professionals. pcAnywhere v10.5 offers extensive security measures to ensure remote control hosts are correctly configured for maximum protection. The many customizable features allow you to configure pcAnywhere to meet your needs. For Windows® 95/98/NT/2000/ME/XP. 5 pack.



XP Ready!

\$499.00

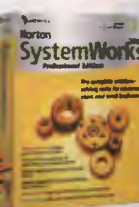
Websearch Code: 189239

Norton SystemWorks 2002 Professional

The complete problem-solving suite for advanced users and small businesses.

Norton Utilities™ 2002 optimizes your PC's performance. Norton CleanSweep™ 2002 cleans out Internet buildup. Norton Web Services™ - powered by ZDNet Updates - and Symantec Web Partners offer convenient online services. Norton Ghost™ 2002 provides fast system upgrading and backup. And WinFax™ Basic Edition lets you send, receive, and manage faxes.

* \$40 rebate coupon in box for previous customers of Norton SystemWorks, Norton AntiVirus, Norton Utilities, Norton CrashGuard, Norton CleanSweep, Norton Ghost Personal, Norton Internet Security.



\$125 after Upgrade Rebate*

XP Ready!

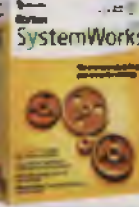
\$165.00

Websearch Code: NOR405

Norton SystemWorks 2002

The smartest way to keep your computer working!

- Norton Utilities 2002 keeps your hard drive organized efficiently, diagnoses and solves a wide range of Windows problems.
 - Norton CleanSweep 2002 improves your PC's by safely and easily cleaning out Internet buildup and other unneeded files
 - Norton Web Services - powered by ZDNet Updates - gives you easy access to updates.
 - Symantec Web Partners offer convenient access to a variety of online services for PC problem solving and system protection.
- * \$30 rebate coupon in box for previous customers of Norton SystemWorks, Norton AntiVirus, Norton Utilities, Norton CrashGuard, Norton CleanSweep, Norton Internet Security.



\$95 after Upgrade Rebate*

XP Ready!

\$125.00

Websearch Code: NOR406

Norton Internet Security Professional Edition

This integrated suite starts with Norton AntiVirus™, the world's most trusted anti-virus solution. Norton™ Personal Firewall defends against hackers. Norton™ Intrusion Detection automatically intercepts suspicious connections. Norton™ Productivity Control manages Internet usage by blocking selected sites and newsgroups. The User Access Manager helps you define individual Internet access privileges for everyone in your workgroup. Norton™ Privacy Control keeps your sensitive information private. And Symantec™ AntiVirus for Palm OS® protects your handheld devices.



INCLUDES
Symantec AntiVirus for Palm OS®

XP Ready!

\$149.00

Websearch Code: 189472

Norton AntiVirus 2002

Protect your PC with the world's leading anti-virus software.

- Antivirus protection that is always up to date
- Auto-updating feature that will automatically sense an open Internet connection and check/retrieve any available updates for virus definitions
- Maximum protection from Internet and email viruses with a global response team of antivirus experts watching out for you
- Reduced size of downloadable files
- Bootable CD for emergency
- "Undo" Functionality to Boot Sector repairs



XP Ready!

\$85.00

Websearch Code: NOR401

Norton Internet Security 2002

Scans and cleans both incoming and outgoing email updates itself automatically over the Internet and defends against script-based viruses such as "Anna Kournikova" even between virus definition updates. Norton™ Personal Firewall blocks hackers' intrusions. Norton™ Privacy Control helps you keep email addresses and credit-card numbers secure and control which sites track your activities with Internet "cookies." Norton™ Parental Control keeps your children safe on the Internet. Lets you set up different Internet access privileges for each person in your household.

* \$20 rebate coupon in box for previous customers of Norton Internet Security, Norton AntiVirus, Norton Personal Firewall or Norton SystemWorks. 5 user pricing available.



\$95 after Upgrade Rebate*

XP Ready!

\$115.00

5 User Pack
\$335.00

Websearch Code: NOR413

Norton AntiVirus Professional Edition

Norton™ AntiVirus Professional Edition has advanced data protection for both PCs and Palm OS® devices. It repairs common virus infections automatically, without interrupting your work. It scans and cleans both incoming and outgoing email and defends against script-based threats such as the "I Love You" virus. Symantec™ AntiVirus for Palm OS® provides essential virus defense for your PDA with a compact yet powerful application that's easy to install and keep updated via HotSync™. Norton™ AntiVirus Professional Edition also includes special software to help you protect and recover sensitive files.



INCLUDES
Symantec AntiVirus for Palm OS®

XP Ready!

\$119.00

Websearch Code: 189470

Back-To-Business Bundle



Suite protection. Sweet price.

\$159.00

Websearch Code: 189471

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premier software partner

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Symantec Value License Program is the fastest and easiest way to license Symantec software. The certificate-based program provides attractive volume discounts, minimal paperwork, and a low minimum initial purchase of only 10 units (1 unit for server based products). No legal review or contracts are required - all you need is a purchase order. With the Symantec Value License Program, you simply purchase one retail or low-cost media pack from your reseller, and we supply a certificate authorising you to make one copy for each license purchased. It's that simple. And unlike many other software licenses that have a limited term, with Symantec once you've purchased your license, it's yours for life. Call 1300 300 003 to find out more.





NEW MAC OS X RANGE

Norton
AntiVirus™Version
8.0

Norton AntiVirus™ works automatically in the background to find and remove viruses without interrupting your work. It even detects viruses in email and Internet files while they're being downloaded to your computer. It can also run scans on a schedule of your choice.

\$115.00

Websearch Code .189580

Norton™
Personal FirewallVersion
2.0

Norton™ Personal Firewall keeps hackers out and personal data safe. Blocks unauthorized access attempts. Also makes your Mac® invisible on the Internet. Run a local self-test, or access the Symantec™ Security Check Web site to have your Mac analyzed instantly by Symantec's powerful online tools.

\$99.00

Websearch Code .189591

Norton
Utilities™Version
7.0

Norton Disk Doctor™ finds and repairs disk problems with a click of a button. Speed Disk™ optimizes your drive's performance. UnErase™ helps you restore deleted files. And Norton FileSaver™ and Volume Recover™ allow you to rebuild damaged file directories.

\$129.00

Websearch Code .189584

Norton
Internet Security™Version
2.0

Norton Internet Security™ for Macintosh® 2.0 includes three great Symantec tools plus two bonus applications. Norton AntiVirus™ is the world's most trusted anti-virus software. Norton Privacy Control™ - safeguards your personal data. And Aladdin iClean™ removes unneeded Internet clutter.

\$139.00

Websearch Code .109681

Norton
SystemWorks™Version
2.0

Norton SystemWorks™ for Macintosh® 2.0 gives you five leading utility products in one convenient package. Norton Utilities™, Norton AntiVirus™, and Dantz Retrospect® Express Backup. A special edition of Alsoft DiskWarrior® helps you recover data in emergencies. And Aladdin Spring Cleaning® safely removes old software.

\$169.00

Websearch Code .189583

UTILITIES

Norton
AntiVirus
2002
5 User Pack

Norton AntiVirus 2002 Multi-user pack provides essential virus protection for the small business to licence up to five workstations. Works in the background to protect your PC, and now it automatically updates its virus definitions when you're connected to the Internet. Don't let your company fall victim to viruses or other malicious Internet code. Supports Windows® XP/2000/NT/98 Workstations.

**\$269.00**

Websearch Code .NOR419

Norton AntiVirus 7.6 Small Business
Solution for 5, 10 or 25 Users

For small managed networks consisting of 1 server and workstations, Norton AntiVirus 7.6 Small Business Solution for 5, 10 or 25 Users, provides automated, centralised virus protection and management. Additional server or workstation licences may be purchased through the Symantec Value Licence Program. For Network 3.13, 3.2, 4.11, 4.2, 5.X; WinNT v4/2000 Server; Os/2 client; DOS, Win3x; Win95/98; WinNT v4/2000 & Macintosh.



5 User Pack
\$649.00
Websearch Code .189541

10 User Pack
\$1115.00
Websearch Code .189542

25 User Pack
\$2465.00
Websearch Code .189543

WinFax Pro 10.02

WinFax PRO 10.02 is the #1 choice for sending, receiving and managing faxes*. Easy to set up, learn and use. Integrates with your key business applications. Version 10.02 lets you send and forward faxes via email. When image clarity is vital, you also have the option of sending photo-quality faxes. For simplified project management, store faxes in the folders of your choice. Telephone connection needed.

* Educational pricing available.

\$129.00

Websearch Code .189552

XP
Ready!

Norton Ghost 2002

Norton Ghost 2002 provides high-performance utilities for fast and safe system upgrading, backup, and recovery. This new version supports the Linux EXT2 file system, writes disk images directly to many popular CDR/RW drives, clones quickly from PC to PC, and enables Windows 2000 and Windows Millennium users to take advantage of its powerful tools.

XP
Ready!**\$129.00**

Websearch Code .NOR411

5 User Pack
\$395.00
Websearch Code .NOR417

NEW
Symantec
Firewall
VPN
Appliance

Delivers top performance security and networking in a single, multi-functional device for remote locations and small business offices with up to 10 employees. Provides secure Internet connectivity and protects networks with integrated firewall functionality. Ensures secure, cost-effective access to networks for remote offices. Business partners through a managed IPSec VPN. Provides high speed access, reliable connectivity, full bandwidth and easy remote management and monitoring.



Symantec™ Firewall/VPN Appliance (Models 100, 200, 200R) is an integrated security and networking device that provides easy setup and cost-effective Internet connectivity between locations.

Model 100
\$649.00
Websearch Code .189541
RentSmart \$7.11 pw

Model 200
\$1115.00
Websearch Code .189542
RentSmart \$12.22 pw

Model 200R
\$2465.00
Websearch Code .189543
RentSmart \$24.18 pw

Norton
Personal
Firewall
2002

Norton™ Personal Firewall 2002 is your maximum defense against hackers.

Monitors all Internet connections to and from your computer and alerts you to attempted intrusions including port scans. Automatically block any system trying to probe your PC. Protect information such as credit cards or social security numbers from unsecured web sites.

**\$85.00**

Websearch Code .NOR403



INTERNATIONAL SOFTWARE WAREHOUSE

EVERYTHING FOR YOUR PC - DELIVERED AUSTRALIA WIDE



PROGRAMMING TOOLS & UTILITIES

DataKeeper 3

DataKeeper continuously monitors file activity in the background and makes compressed backups on the fly, keeping you protected. Featuring password protection and encryption, fault-tolerant backup sets, complete registry protection, continuous backup and monitoring.



\$75.00

Websearch Code ..POW035

DriveCopy 4.0

DriveCopy is the safest, easiest, and most affordable way to copy your old hard drive to your new hard drive without losing a single preference, setting, or byte of data. Connect both hard drives to your computer, and with a few simple steps, everything from your old hard drive is automatically copied to your new one.



\$99.00

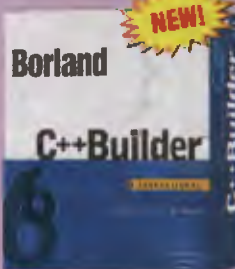
Websearch Code ..POW046

Borland C++Builder 6 Pro

C++Builder 6 Professional provides a highly productive visual development environment for building Web and database applications for the Windows platform. C++Builder enables developers to easily integrate Web Services from across the Internet into their applications using the power and flexibility of SOAP, XML, and WSDL. C++Builder also includes CLX, the Borland Component Library for Cross-platform development. CLX enables the creation of cross-platform-ready applications that can be re-compiled and run on the Linux platform with currently planned releases of Borland C++ products for Linux. Gain access to data with database drivers supporting Borland InterBase, Access, Paradox, dBase, and MySQL.

Key Features

- Integrate Web Services into your applications
- Create cross-platform-ready solutions
- Quickly connect to your local databases
- Gain full control of the development and deployment of large projects
- Create powerful applications with a professional environment
- Benefit from accelerated code completion and CodeInsight
- Diagnose your errors on the spot with CodeGuard



Upgrade
\$819.00
Websearch Code ..189736

Full
\$2079.00
Websearch Code ..189736

Borland JBuilder 6 Pro

The leading Java database and Web development solution.

JBuilder is the leading cross-platform database and Web application development environment for the Java 2 platform. Rapidly build and deploy Web applications with servlets and JSP using JBuilder wizards and tools and the included Borland Enterprise Server, Web Edition. Maximize productivity with code refactoring, Javadoc tools, JDK switching, 250+ reusable JavaBeans with source, and advanced smart debugging. With presentation, transformation, and validation of XML documents, JBuilder helps you take full advantage of XML. Speed development of database applications with data-aware components and scalable database tools. Choose JBuilder 6 Professional for a flexible, open solution on Windows, Linux, Solaris, and Mac OS platforms.



Upgrade
\$849.00
Websearch Code ..189326

Full
\$2099.00
Websearch Code ..189326

Borland Optimizeit Suite 4.11

Performance tuning for Java

A pioneer in Java performance tuning, the Optimizeit Suite delivers advanced, easy-to-use features and extreme scalability. The Optimizeit Suite integrates with leading application servers such as Borland Enterprise Server, and it provides accurate, relevant tuning data for even very large J2EE platform applications.

The Optimizeit Suite includes three integrated tools designed to help you efficiently pinpoint performance and reliability issues in Java code.

- Profiler - Spot and cure memory leaks and performance bottlenecks
- Thread Debugger - Catch fatal thread issues before they slip into production
- Code Coverage - Improve and validate test plans



Full
\$3299.00
Websearch Code ..189737

PartitionMagic 7.0

PartitionMagic allows you to create, resize, merge and convert partitions on your hard drive without destroying data. Award-winning PartitionMagic is the world's leading hard-drive partitioning software for PC enthusiasts.

Features:

- Merge NTFS partitions
- Undelete a deleted partition from rescue disks
- Support for Windows XP
- Partition hard drives as large as 80 GB
- Access and partition external USB drives

Other Powerful Features:

- Organize and protect the information on your hard drive
- Easy, step-by-step wizards help you perform partitioning tasks
- Preview the effects of partitioning before implementing anything
- Safely manage multiple operating systems
- Convert from one file system or partition type to another without losing data
- Supports FAT, FAT32, NTFS, and Linux ext2/swap file systems



Upgrade
\$99.00
Websearch Code ..POW071

Full Product
\$139.00
Websearch Code ..POW071

Drive Image 5.0

PowerQuest's Drive Image 5.0 - the answer for protecting all the valuable data on your hard drive, including disaster recovery and backup for system upgrades.

- QuickImage Windows interface which lets you schedule regular, automatic backups of your entire hard drive or individual partitions.
- PowerQuest DataKeeper for constant monitoring and automatic file backup.



Upgrade
\$99.00
Websearch Code ..POW055

Full Product
\$139.00
Websearch Code ..POW056

DeployCenter 5.0

PowerQuest DeployCenter 5 (formerly Drive Image Pro) offers simplified system deployment and upgrades. Deploying or upgrading computer systems can be extremely time consuming and costly. DeployCenter lets you take care of these critical issues to help ensure your organisations success?

- Remotely manage multiple clients
- Deploy or upgrade Windows workstations
- Easily introduce new systems to the network



Upgrade 10 User
\$185.00
Websearch Code ..POW073

10 User
\$399.00
Websearch Code ..189865

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www.iswh.com.au



Macromedia Flash MX

Macromedia Flash MX provides everything you need to create and deliver rich Web content and powerful applications. Whether you are designing motion graphics or building data-driven applications, Flash MX has the tools you need to produce great results and deliver the best user experiences across multiple platforms and devices.

Upgrade from Flash	Full Product
\$489.00	\$1199.00
Websearch Code ... 189823	Websearch Code ... 189819

NEW



WEB, DESIGN & PUBLISHING

Macromedia Director 8.5 Shockwave Studio

The solution for developing magnetic destination content and interactive media on the Web, CD/DVD-ROMs and corporate intranets - including 3D entertainment, interactive product demonstrations, and online learning applications, high performance multi-protocol, RealMedia support, and Shockwave Multi-user.



Full Product
\$2229.00
Websearch Code ... MAC411
Upgrade from 8
\$459.00
Websearch Code ... 130534

Macromedia Dreamweaver UltraDev Studio

Now Including Fireworks 4, ColdFusion Studio 5.0 and JRun Studio 3.0!

Rapidly build database-driven Web applications for industry standard servers and databases and maintain total control over source code with a professional hand-coding environment. Rapidly develop sophisticated e-business JSP, ASP and ColdFusion Web applications.

Upgrade from Dreamweaver	Full Product
\$659.00	\$1339.00
Websearch Code ... MAC427	Websearch Code ... MAC426



Macromedia Web Design Studio

With Dreamweaver, Fireworks, Flash and Freehand, the Macromedia Web Design Studio is the complete solution for professional Web site design.

Go from concept to completion faster than ever before! With Dreamweaver, Fireworks and Flash, Macromedia makes it easy to build a world-class Web site. Tight product integration lets you efficiently design, edit and optimise graphics for the Web in Fireworks, then seamlessly integrate with Dreamweaver to produce and manage your site. Finally, use Flash to add animations, interactivity and sound to produce a high-impact site that plays back smoothly, even over low-band width.

Upgrade	Full Product
\$839.00	\$1599.00
Websearch Code ... MAC391	Websearch Code ... MAC390

FREE FLASH MX UPGRADE
Ask for details



Macromedia Dreamweaver 4

Create a professional web site whether you prefer to work with familiar visual layout tools or demand the control of a robust text-editing environment. Macromedia user interface makes it easy to create and manage your site, while robust text-editing environment gives hand-coding professionals the control they demand.



Upgrade	Full Product
\$339.00	\$660.00
Websearch Code ... MAC376	Websearch Code ... MAC375

Macromedia Fireworks 4

Create, edit and animate Web graphics with a complete set of bitmap and vector tools. Add advanced interactivity and optimise images in a robust, professional environment. Use configurable export controls to export images and interactivity into Dreamweaver and other HTML editing environments. Launch and edit graphics between Dreamweaver, Macromedia Flash and all Macromedia Products for efficient workflow.



Upgrade	Full Product
\$339.00	\$660.00
Websearch Code ... MAC376	Websearch Code ... MAC377

Macromedia ColdFusion Server

Professional Edition

The fastest way to build and deploy powerful Web applications! Create the applications you need with ColdFusion 5, including content-publishing systems, online stores, business reporting and self-service solutions.



Full Product	Upgrade
\$2385.00	\$1199.00
Websearch Code ... ALL018	Websearch Code ... ALL019

Macromedia FreeHand 10

FreeHand 10 offers graphic designers unsurpassed productivity features like Master Pages and the new Macromedia User Interface plus sophisticated vector-based illustration tools like Contour Gradients and Symbol-based Brush Strokes for easily creating advanced patterns and designs. Create once, then publish across multiple mediums including, print, Web and beyond.



Upgrade	Full Product
\$349.00	\$849.00
Websearch Code ... 130563	Websearch Code ... 130560

Macromedia HomeSite 5

Empowers professional developers to build reliable Web sites in less time. Advanced coding features enable you to instantly create and modify HTML and XHTML tags while enhanced productivity tools allow you to more easily validate, reuse, navigate, and format your code.



Full Product
\$225.00
Websearch Code ... 189225
Upgrade
\$80.00
Websearch Code ... 189280

STUDENT PRICING NOW AVAILABLE

Student editions of Macromedia Dreamweaver, Fireworks, Flash and Freehand.

Please call for Volume License Pricing! Macromedia Tech Support 1300 654 754

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EVERYTHING FOR YOUR PC - DELIVERED AUSTRALIA WIDE



WEB, DESIGN & PUBLISHING



everywhere
you look

Cut loose with more cutting edge software.

Adobe Upgrades

Adobe Acrobat 5
(From version 2 or later)



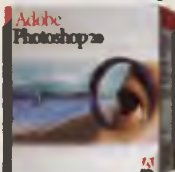
\$249.00
UPGRADE

Adobe Illustrator 10



\$399.00
UPGRADE

Adobe Photoshop 7



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Adobe PageMaker 7



\$215.00
UPGRADE

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Pricing

All orders are invoiced
inclusive of GST. Prices
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product availability.*

* See our Terms & Conditions on page 2.

Adobe Design Collection*

The Adobe Design Collection contains four leading-edge design and publishing applications in one fully integrated suite. Together these programs give you everything you need to create and produce professional documents across media.

\$2449.00
Websearch WIN189660
Websearch MAC189661

- Adobe InDesign
- Adobe Photoshop

- Includes:
- Adobe Illustrator
- Adobe Acrobat



Adobe Publishing Collection

The Adobe Publishing Collection brings together four powerful applications for business, education and small office/home office professionals. These complementary applications help you create professional looking communications for print and the Web.

Includes:

- Adobe PageMaker
- Adobe Photoshop

- Adobe Illustrator
- Adobe Acrobat



\$2599.00
Websearch WIN130987
Websearch MAC ...189337

Adobe Web Collection*

The Web Collection is a comprehensive, tightly integrated software suite that gives you the power to design extraordinary still and interactive Web graphics, optimize those graphics for efficient downloading, and build dynamic Web sites that support the latest technology and standards.

Includes:

- Adobe GoLive
- Adobe Photoshop

- Adobe Illustrator
- Adobe LiveMotion

\$2699.00
Websearch WIN ...ADO209
Websearch MAC ...ADO210



Adobe Digital Video Collection

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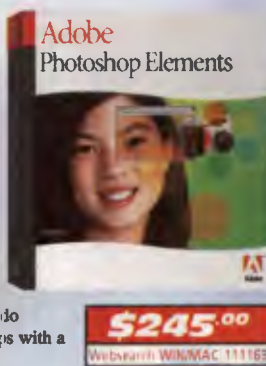
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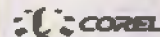
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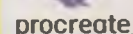
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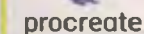


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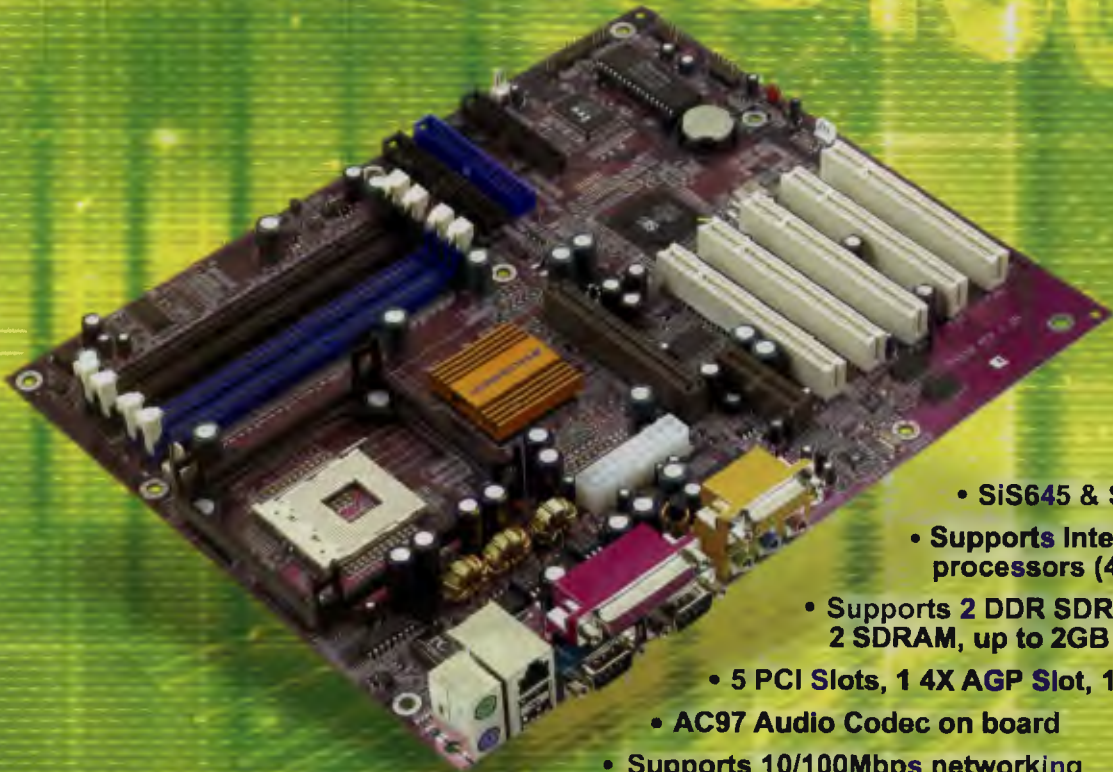
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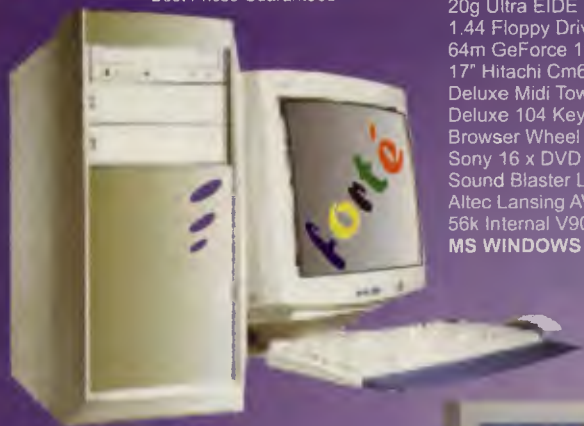
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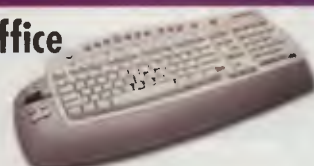
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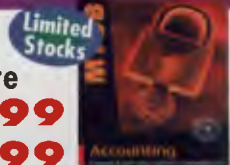
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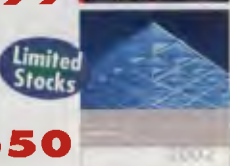
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S20191(C)Epson Stylus Color 440/640/660/740		\$18	Intel Pentium III-1000, S370		\$300	TV-OUT CABLE FOR G450/G550 OEM	\$29	HP Scanjet 5400	\$390
T003(B)Epson Stylus Color 480/900/900N		\$68	Intel Pentium III-1.13, S370		\$348	LOMEGA DRIVE		\$497	
T0014(C)Epson Stylus Color 480/900/900N		\$22	Intel Pentium III-1.26, S370		\$420	External 100 Mb EPP	\$253	HP Scanjet 6300	\$599
KEYBOARD		\$30	Intel Pentium III-1.6G, (478)		\$338	External 100 Mb IDE	\$173	HP Scanjet 7400c	\$918
Microsoft Natural K/B PS/2		\$35	Intel Pentium 4-1.7G, (478)		\$377	Internal 100 Mb IDE	\$129	HP Scanjet 7450c	\$1,320
Microsoft Internet K/B PS/2		\$35	Intel Pentium 4-1.7G, (423)		\$400	Internal 250 Mb IDE	\$180	Canon FB 640pex	\$125
Microsoft Cordless Internet K/B & MOUSE		\$110	Intel Pentium 4-1.8G, (478)		\$460	External 250Mb EPP	\$376	Canon FB 660U	\$250
AAA Windows 98 K/B, PS/2		\$14	Intel Pentium 4-1.9G, (478)		\$552	External 250Mb USB	\$330	Canon FB 1230U	\$375
AAA Windows 98 K/B, AT		\$14	Intel Pentium 4-2G, (478)		\$870	1000Mb Zip Disk	\$19	Canon FB 1240U	\$290
Logitech cordless K/B&Mouse		\$118	Intel Pentium 4-2.2G, (478)		\$1,269	250Mb Zip Disk	\$21	Canon D2400UF	\$756
Logitech Internet K/B		\$40	AMD Duron Socket A 1000		\$121	PEERLESS FIREWIRE or USB 10GB	\$788	Epson Perfection 640U	\$241
Logitech Optical cordless K/B&Mouse		\$195	AMD Duron Socket A 1100		\$160	PEERLESS FIREWIRE or USB 20GB	\$900	Epson Perfection 1240U	\$374
MIC		\$55	AMD Duron Socket A 1200		\$166	PREDATOR USB 8x4x32	\$535	Epson 1200 Series SCSI	\$474
Microsoft Intellimouse Optical oem		\$75	AMD Athlon K7- 1400C		\$333	PREDATOR Firewire 8x4x33	\$730	Epson 1250	\$215
Microsoft Intellimouse Explorer		\$90	Athlon XP-1700+ CPU		\$289	POCKETZIP PC CARD DRIVE	\$116	Epson 1250 Photo	\$285
Logitech Mouse Optical PS/2		\$35	Athlon XP-1800+ CPU		\$340	PRINTERS		\$355	
Logitech Mouse Optical PS/2 CORELESS		\$129	Athlon XP-1900+ CPU		\$466	HP DESKJET 650C	\$123	Epson 1650 Photo	\$408
Logitech cordless mouse		\$50	Athlon XP-2000+ CPU		\$588	HP DESKJET 840C	\$160	Epson 1680	\$1,829
A4 Tech OpticalMouse		\$30	Athlon Heavy Duty CPU FAN		\$20	HP DESKJET 845C	\$165	Epson 16840XL(A3)	\$4,989
SWANN Optical Mini Mouse		\$40	SPEAKER		\$9	HP DESKJET 930C PHOTO	\$225	Epson 2450 Photo	\$854
MEMORY		\$75	AAA 180W Amplifier speaker		\$9	HP DESKJET 948C	\$250	MONITOR	
128MB PC133 SDRAM 168pin		\$75	AAA 480W Amplifier speaker		\$9	HP DESKJET 960C	\$415	15" LG 552V	\$235
256MB PC133 SDRAM 168pin		\$140	AAA 800W Sub-w.woofer speaker		\$48	HP DESKJET 970CXI	\$425	17" LG 775N	\$299
512MB PC133 SDRAM 168pin		\$280	80W INTERNAL 5.25" SPEAKER		\$16	HP DESKJET 990CXI	\$550	17" LG 775FT	\$410
128MB PC133 SDRAM, Kingmax		\$80	Creative Desktop Theatre 2200 5.1		\$281	HP DESKJET 1120CXI	\$620	17" LG 795FT	\$505
256MB PC133 SDRAM, Kingmax		\$152	Creative FPS5300 Speakers		\$260	HP DESKJET 1220C	\$760	17" LG 995E	\$699
128MB DDR DIMM 2100		\$85	Creative DTT2500 Digital 5.1		\$516	HP DESKJET 1125C	\$530	15" PHILIPS 105E	\$240
256MB DDR DIMM 2100		\$170	Creative DTT2500D Playworks		\$550	HP DESKJET 1160C	\$950	17" PHILIPS 107E	\$360
512MB DDR DIMM 2100		\$430	Creative DTT3500 Digital 5.1		\$728	HP DESKJET CP1700C	\$1,050	17" PHILIPS 107S	\$399
64MB Rambus RDRAM 800Mhz		\$55	Creative FPS1000 4.1		\$115	HP DESKJET 2200C	\$922	17" PHILIPS 107T	\$400
128MB Rambus RDRAM 800Mhz		\$105	Creative FPS1600 (White) 4.1		\$145	HP DESKJET 2500C	\$1,690	17" PHILIPS 107P	\$572
256MB Rambus RDRAM 800Mhz		\$205	Creative FPS2000 4.1		\$345	HP PHOTOSMART P1215	\$650	19" PHILIPS 109S	\$750
256MB FOR NOTEBOOK		\$210	Creative PC Works White 2.1		\$72	HP PHOTOSMART P1218	\$788	19" PHILIPS 109P	\$934
MOUSE		\$81	Creative SW320 SPEAKERS		\$81	HP LASERJET 1000	\$565	21" PHILIPS 201B	\$1,621
50k V.90 Ultra Internal		\$29	Creative PS2000 Playworks 2		\$266	HP LASERJET 1200	\$720	21" PHILIPS 201P	\$1,799
56k V.90 Ultra External		\$85	Creative SLIM500 Soundworks 2.1		\$173	HP LASERJET 1200N	\$1,227	15" MITSUBISHI DV1554	\$260
SWANN 56K USB		\$83	Altec Lansing ACS33 - 3p Speaker		\$82	HP LASERJET 1220	\$875	17" MITSUBISHI 1770G	\$315
SWANN 56K TURBO EXTERNA		\$106	Altec Lansing ACS48 - 3p speaker		\$254	HP LASERJET 2200D	\$1,450	17" MITSUBISHI DV1786	\$430
SWANN 56K Smart II EXTERNA		\$137	Altec Lansing ACS54 - 5p speaker		\$185	HP LASERJET 2200DN	\$1,900	19" MITSUBISHI DV1995	\$625
NETCOMM 56k Internal		\$41	Altec Lansing AVS500 - 5p speaker		\$130	HP LASERJET 2200NT	\$2,455	19" MITSUBISHI DV19NF	\$999
NETCOMM 56k External		\$92	Altec Lansing ADA880 - Dolby - 5 P		\$494	HP LASERJET 2100M	\$1,199	17" SONY E230	\$590
56K PCMCIA FAX/MODEM		\$94	Hercules XPS 510 6-p speaker		\$150	HP LASERJET 4100	\$2,116	19" SONY G420	\$1,150
Hercules XPS 210 3-f speaker		\$95	Hercules XPS 210 3-f speaker		\$95	HP LASERJET 4100N	\$2,800	21" SONY G520	\$1,945
Genuine Intel 845BG, DDR RAM		\$265	SOUND CARD		\$24	HP LASERJET 4550 COLOR	\$3,675	17" HYUNDAI V770	\$305
Genuine Intel D845WN, SD RAM		\$255	ESS pci sound card,		\$24	HP LASERJET 4550N COLOR	\$4,315	19" HYUNDAI P910+	\$512
Genuine Intel D850DM, RD RAM		\$312	Creative Vibra 128 PCI card		\$42	HP LASERJET 4550DN	\$2,537	17" VIEWSONIC E70	\$299
P4, Gigabyte 8IDML-C, (478), SD RAM		\$177	SoundBlaster Live 5.1 retail		\$85	HP LASERJET 5000	\$7,518	17" VIEWSONIC E70F	\$375
P4, Gigabyte 8IDX, (478), SD RAM		\$206	SoundBlaster Audigy Sound Card box		\$189	HP LASERJET 8150	\$4,188	17" VIEWSONIC PS775	\$375
P4, Gigabyte 8SRX, (478), DDR RAM		\$198	Sound Blaster Audigy Platinum		\$390	HP LASERJET 9000	\$7,521	17" VIEWSONIC PF775	\$575
P4, ASUS P4B, (478), SD RAM		\$353	Sound Blaster Audigy Platinum Ex		\$490	HP OfficeJet 725, fax/printer/scanner	\$367	19" VIEWSONIC P95	\$595
P4, ASUS P4T-E, (478), RD RAM		\$415	Hercules Maxi Game Theater XP		\$275	HP OfficeJet G85, fax/printer/scanner	\$1,243	19" VIEWSONIC PF790	\$850
P4, ASUS P4B-M, (478), SD RAM		\$287	VIDEO CARD		\$49	HP OfficeJet G95, fax/printer/scanner	\$1,606	21" VIEWSONIC G810	\$1,260
P3, Gigabyte 6VTXE		\$139	nB5 56k AGP VR PCI VUA Card		\$49	HP OfficeJet K60, fax/printer/scanner	\$828	15" DELL (Ex Demo)	\$160
P3, ASUS TUSI-M		\$147	32Mb RivaTNT2, M64, AGP		\$70	HP OfficeJet T65, fax/printer/scanner	\$487	17" BENQ	\$295
AMD, Gigabyte 7VTXE, W/Sound		\$210	32Mb GeForce II MX, TV out		\$95	HP OfficeJet P5750, fax/printer/scanner	\$475	17" HITACHI CM615	\$340
AMD, Gigabyte 72XE, W/Sound		\$158	32Mb GeForce II MX, TV out		\$106	Epson Stylus 580 usb	\$90	17" HITACHI CM621	\$430
MSI K7T 266 Pro2		\$250	64Mb GeForce II MX, TV out		\$107	Epson Stylus C20UX	\$115	19" HITACHI CM721	\$710
AMD, ASUS A7V266-E, U101		\$278	64Mb GeForce II MX, TV out		\$120	Epson Stylus C40UX	\$150	21" HITACHI CM833 FLAT	\$1,638
AMD, ASUS A7A266-E, U100		\$231	64Mb GeForce II MX 400, TV out		\$131	Epson Stylus C40SX	\$150	LCD PANEL	
AMD, ASUS A7M266, U100		\$231	64Mb GeForce II MX 400, TV out		\$142	Epson Stylus C60	\$242	15" BENQ FP557	\$800
AMD, ASUS A7VL133-VM w/Vedio, sound		\$148	ASUS V7100 32Mb GeForce 2 MX 2VID		\$272	Epson Stylus C70	\$375	15" HITACHI	\$900
MSI MS K7T TRUBO		\$225	ASUS V7100 32Mb with TV-Out		\$176	Epson Stylus C80	\$525	17" HITACHI	\$1,440
MSI MS K7T TRUBO RAID		\$275	ASUS V7700 32Mb GeForce 2 GTS with TV		\$228	Epson Stylus 980	\$640	15" LG 552V	\$850
MSI MS K7T TRUBO RAID LE		\$260	ASUS V7100 64Mb Pro MX400 with TV		\$189	Epson Stylus I160	\$525	15" Viewsonic VE150	\$999
MSI K7T266 PRO/AMD		\$260	ASUS V7100 64Mb Pro MX400 with TV		\$236	Epson Stylus 3000	\$1,775	15" Viewsonic VE150B	\$810
MSI 645 ULTRA/P4 DDR		\$240	ASUS V7700 32Mb GeForce 2 GTS Deluxe		\$389	Epson Photo 810	\$327	18" SONY	\$3,436

Computer Warehouse Sydney P/L. Any system variation, please call our sales team. WEB SITE: www.cwsydney.com.au

EMAIL: sales@cwsydney.com.au **TRADING HOURS:** Mon to Fri 9:30am-6:30pm Sat: 10:00am-4:00pm

Tel: (02) 95192888, Fax: (02) 95192700, ADDRESS: 3/53-57 Burrows RD, Alexandria, NSW 2015

BANK DETAIL: National Bank at Mascot, ACCOUNT#:45902 5367 BSB#: 082282

Warranty: All system come with 12 months parts and 5 years labour RTB Warranty. All prices include GST, exclude freight costs, and are subject to change without notice. Stocks are limited. Errors and omissions excepted. Payment terms are C.O.D. cash, cash D/D, money order, bank cheque. Trademarks & Logos are the property of the respective owners.



Please check our Web Site for additional products, online ordering and updated prices. Prices include GST and are subject to change without prior notice

Computer Parts and Accessories

CPUs		Motherboards		Printers		Sound Cards	
Intel		Pentium III / Celeron		EPSON		PCI Sound	
Celeron 1000	\$171	ASUS CUSL2	\$240	Stylus C20UX	\$113		
Celeron 1100	\$197	ASUS TUSL2-C	\$210	Stylus C40UX / 40SX	\$164	PCI-128 oem	\$41
Celeron 1200	\$217	ASUS TUSI-M	\$165	Stylus C60	\$250	Live oem	\$85
Celeron 1300	\$256			Stylus C70	\$405	Live DE 5.1	\$95
P4-1.6GHz S478	\$329	GA-6VTXE	\$145	Photo 810	\$345	Audigy DE	\$199
P4-1.7GHz S478	\$395	GA-60XET	\$235	Photo 895	\$670	Audigy Platinum	\$427
P4-1.8GHz S478	\$460	GA-60XT	\$180	Photo 1290 (A3)	\$909	Audigy Platinum EX	\$495
P4-1.9GHz S478	\$575	MSI-6368	\$143			Hercules Fortissimo	\$100
P4-2.0GHz S478	\$907					Hercules Theatre XP	\$260
AMD		PROFAC		Canon		Memory	
Athlon XP 1600 & Fan	\$295	M758LMR	\$160	BJC1000SP	\$99	Call for latest price	
Athlon XP 1700 & Fan	\$315	Pentium 4		BJC 2100SP	\$125	Networking	
Athlon XP 1800 & Fan	\$378	Gigabyte 8SDX	\$220	S-300	\$220	NIC 10/100Mb	\$22
Athlon XP 1900 & Fan	\$515	Gigabyte 8IDMLC	\$235	S-400SP	\$230	8 Port Hub 10Mb	\$64
Athlon XP 2000 & Fan	\$646	Gigabyte 8IDX	\$265	S-800	\$550	4 Port Hub 100Mb	\$78
Duron 1000 & Fan	\$150	Gigabyte 8IRX	\$280	Laser LBP810 (8ppm)	\$475	4 Port switch 10/100	\$90
Duron 1100 & Fan	\$177	Asus P4T-E	\$410			8 Port switch 10/100	\$109
Duron 1200 & Fan	\$199	Asus P4B	\$325			USB Hub 4 port	\$50
Hard disks		Asus P4B-M	\$270			CD & DVD Rom	
Notebook 10GB	\$214	Asus P4B266	\$410	HP 656C	\$138	52x CDROM	\$65
Notebook 20GB	\$265	Asus P4S333	\$300	HP 845C	\$184	DVD 16x Sony/Sams	\$120
Maxtor 20GB	\$160	Asus P4S333-FX	\$253	HP 948C	\$255	DVD 16x Pioneer/LG	\$130
Maxtor 40GB	\$180	MSI 845 Ultra	\$249	LaserJet 1000	\$599	DVD 16x Panasonic	\$150
7200 RPM		Intel P4 D850MV	\$340	Panasonic KXP7100	\$520	DVD 16x Diamond	\$145
WD 200BB 20GB	\$185	Intel P4 D845WN	\$312	Scanners		Removable Storage	
WD 400BB 40GB	\$215	AMD Athlon / Duron		Acer 3300U	\$110	100Mb USB Zip	\$179
WD 600BB 60GB	\$280	Gigabyte 7ZXE	\$170	Canon N340P	\$110	250Mb USB Zip	\$360
Maxtor 20GB	\$185	Gigabyte 7VTXE	\$200	Canon N640P	\$130	250Mb Internal Zip	\$175
Maxtor 40GB	\$210	ASUS A7VL133-VM	\$170	Canon N670U	\$170	Cases	
Maxtor 60GB	\$280	ASUS A7V266-E	\$335	Canon N676U	\$200	ATX Midi case	\$55
		ASUS A7M266-E	\$360	Canon N1240U	\$275	ATX Full tower case	\$110
Barracuda IV 40GB	\$210	ASUS A7A266-E	\$270	Canon D660U	\$255	ATX Aopen KF45	\$70
Barracuda IV 60GB	\$270	ABIT KT7A	\$214	HP 2200C	\$174	ATX Aopen HF45	\$110
		ABIT KG7 Light	\$280	HP 4400C	\$250	ATX Aopen HQ 08	\$185
Deskstar 20GB	\$203	ABIT KG7	\$309	Mitsubishi DV650U	\$110	ATX Aopen H600	\$176
Deskstar 40GB	\$248	ABIT KR7A Raid	\$380	Epson Perfection 1250	\$215	ATX Macase KA330	\$140
Deskstar 60GB	\$290	ABIT KR7A	\$323	Epson Perfection 1650	\$340	ATX Macase KA230	\$205
				Epson 1650 photo	\$436	ATX Macase KA130	\$250
				modem and cards			
				Promise U100	\$90		
				PCI SCSI II card	\$44		
				USB PCI card	\$35		

Computer Systems - 1-year parts 2-year labour Return to Base Warranty

Pentium 4 Series		AMD Astra Pro		Value Series		Monitors		Altec Lansing ACS22/300 \$40/\$80	
• P4 Motherboard • 256M SDRAM PC133 • 20GB 7200rpm HDD • Panasonic Floppy • 64M GeForce II MX • PCI 3D Sound card • 16x DVD Rom • 17" Acer / LG Monitor • Subwoofer Speakers • Midi Deluxe ATX case • Microsoft Internet K/B • Microsoft Intellimouse & Pad		• Gigabyte Motherboard • 128M SDRAM PC133 • 20GB 7200rpm HDD • Panasonic Floppy • 64M GeForce II MX • S/B 128 Sound card • 50x CD Rom • 17" Acer / LG Monitor • 480 Watt Speakers • Midi Deluxe ATX case • Acer Win98 Keyboard • Microsoft Intellimouse & Pad		• Pentium II/III Motherboard • 128M SDRAM PC133 • 20GB HDD UDMA 100 • Panasonic Floppy • 8M Video card built-in • PCI 3D Sound card built-in • 56K Modem V90 • 50x CD Rom • 15" SVGA Monitor • 120 Watt Speakers • Midi Deluxe ATX case • Win98 Keyboard • A4 Mouse & Pad		15" LG 552V \$230 15" Mitsubishi / Acer 54E \$240 17" Acer V771 C / Mitsubishi \$320 17" LG 700S \$320 17" Mitsubishi 1786FD \$455 17" Samsung 753DF \$480 17" Hitachi CM615ET \$340 17" Hitachi CM621 \$420 17" LG SW775FT \$439 17" Sony CPDE230 \$599 19" Sony CPDG420 \$1099 19" Olympic 0.25 \$480 19" Hitachi CM721 \$726 19" Hitachi CM715 \$602 15" LCD LG / Samsung \$850		- Altec Lansing ATP3 \$185 - Altec Lansing ATP5 \$265	
Blank CDs		Cameras		MS Software		Modems		Mice	
- CD 80min \$0.7 - Ricoh/Kodak/Misumi \$1.5 - Verbatim/Kodak 80m \$1.5 - Rewritable CD \$3.0		- Logitech clicksmart \$172 - Creative Web cam \$87 - Vcam Digital \$90 - Acer 3 in 1 digital \$200		- Windows ME / 98 \$210 - Windows XP Home Ed \$217 - Windows XP Professional \$335 - Windows 2000 oem-Full \$330 - Office XP Small Business \$380 - Office 2000 / XP - Pro-Full version oem \$500		56K Int \$39 - Netcomm 56K Int \$44 56K Ext \$90 - Netcomm Simplicity com \$99 - Netcomm Rave USB \$130 - Netcomm Roadster \$175 - PCMCIA 56K \$116		- Logitech \$15 - A4-Tech PS/2 or serial \$7 - A4-Tech 4D wheel \$30 - A4-Tech wireless PS/2 \$30 - wheel mouse \$15 - Optical mouse \$35	
Speakers		Keyboards		Logitech		Microsoft			
120W SPKs / 480W \$10/\$30 400W SPKs with Sub-Woofer \$40 - Creative SW320 S-Woofer \$85 - Creative FPS1000 4 Spks \$125 - Creative DTS300 4 Spks \$290		- Win98 AT or PS/2 \$15 - Acer AT or PS/2 \$20 - Multimedia AT or PS/2 \$25 - Logitech Internet \$45 - Logitech Cordless Freedom \$119		- Microsoft Internet \$40 - Microsoft Internet Pro \$75 - Microsoft Natural Elite \$50 - Microsoft Natural Pro \$100 - Wireless & mouse pointer \$80		- Wheel mouse Optical oem \$55 - IntelliEye Explorer oem \$65			

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Eftpos and Visa cards. All orders are despatched after clearance
Prices are exclusive of delivery and Insurance

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TELEPHONE LINE SHARING

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FAXSTREAM DUET SWITCHES

Will allow any Fax or Modem device to operate with the Telstra FaxStream Duet service. Provides fully automatic fax reception, just like having a separate line. Two models available.



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Integrate ANY Fax (or Modem) into ANY telephone line for fully automatic fax reception. Operates with or without an answering machine. Just plug it into any telephone socket. Two models available.



AUTO MODEM RECEPTION

Choose FMX-PRO when you wish to fit a Modem to your Fax line and the Modem also needs to receive data calls. Directs Fax calls to your Fax and Data Calls to Modem. Barge-in protection is provided to prevent one device interrupting the other while it is in use.



OUTGOING MODEM or EFT-POS

Choose AUTO-CONNECT when you wish to fit a Modem or EFT-POS unit to your Fax line, to make OUTGOING calls. Provides automatic connection on dialing. Other device is then locked out. Ideal for connection of Payphones, Modems and EFT-POS to any Fax, Commander, PABX or any type of Telephone line.



TELEPHONE CALL RECORDING AND OTHER APPLICATIONS

CALL RECORDING UNIT

Record your telephone calls to PC, or other recorder, from an ordinary single line or any multi-line phone system. Automatic operation with start/stop capability from any handset. PC software & cables supplied.



EASYCALL MULTIPLE NUMBER

Operate Two numbers on one line. Auto-Connect will connect your Multiple number calls to one set of phones or answering machine and your Normal number calls to another set of phones or answering machine.



TWO LINE SELECTOR

Now you can connect TWO telephone lines (Telstra, Optus, ISDN or Tie Line) to one EFT-POS, Fax, Modem, Cordless Telephone, Answering Machine or any Telephone device. Receive incoming calls from either line. Make outgoing calls on either line.



NETWORK ISOLATION UNIT

100% Network Firewall Protection! This unit automatically disconnects your Modem Server from your network whenever the modem makes or receives calls and reconnects the modem when it is finished.



MUSIC OR MESSAGE ON HOLD FOR ANY LINE

DIGITAL MESSAGE CENTRE

DMC is Australia's #1 Message on Hold player. Low Cost, High Quality unit provides many years of trouble free operation. Message updates via plug in non volatile digital memory cartridges. Fit DMC and stop paying Radio on Hold licence fees.



MESSAGE UPDATE BY MODEM

DMC-PRO is our latest MP3 based product. It allows dial in Message Updates using its internal modem option or plug in flash card. We have a national network of Dealers ready to produce your customised messages.



SINGLE LINE ON HOLD

Just plug our MOH Line Sharer into any socket on your telephone line, connect any audio source (Radio, PC or DMC) and you now have a professional telephone line On Hold facility for your existing telephones.



AUTOMATIC ATTENDANT

Our single line CALL ATTENDANT will answer your incoming calls after 4, 6 or 8 rings, play a greeting & message to your callers until you are able to answer. Also provides Message on Hold facility.



CONTROL YOUR EQUIPMENT BY TELEPHONE LINE

REMOTE TELEPHONE ACTIVATOR

Call in to Switch ON, Switch OFF or RESET your PC, SERVER or any electrical equipment by telephone line using touch tone commands. RTA connects to any telephone line. Requires PCU or PCR accessory.



RTA-PRO VERSION

PRO version provides independent control of 2 separate outputs, with PIN number security. Status tones for each output are provided on answer. Shares an existing line when used with the Multiple Number service.



POWER CONTROL UNIT

PCU connects direct to the RTA and also to your power socket to allow telephone line dial in switching of the 240V supply connected to your equipment. Easy Plug In User Installation. Controls up to 10 Amps.



PC RESET UNIT

PCR connects to any PC to allow remote telephone PC RESET, or can also be used to turn ON or OFF PC's with ATX style motherboards. Easy User Installation.



TELEPHONE LINE DOOR STATION AND EXTENSION TRANSFER

DOOR STATION UNIT

Will RING all of your telephones when a visitor arrives at your front door or gate. Answer to communicate. Open the door or gate with touch tones. Operates on any ordinary single line or multi-line phone system. Requires surface mount or flush mount door phone.



SURFACE MOUNT DOOR PHONE

This unit provides for quick and easy mounting direct onto any wall surface. Your visitor just presses the integral call button to ring your telephones. Provides clear 2 way communication as soon as you answer.



FLUSH MOUNT DOOR PHONE

This attractive Stainless Steel unit is designed for a flat recessed fit into your wall surface. Your visitor just presses the integral call button to ring your telephones. Provides clear 2 way communication as soon as you answer.



TELEPHONE CALL TRANSFER

Easy-Transfer allows you to answer a call on one telephone and then TRANSFER the call to another telephone fitted to the same line. Also provides INTERCOM facility. Uses your existing telephones.



ARE YOUR PRODUCTS OR SERVICES WORTH TALKING ABOUT ?

TALKING DISPLAY UNIT

TDU will play 1 or more pre-recorded messages as soon as it is triggered by a movement sensor, a switch, or at a preset time interval. Ideal for Product Promotions, Product Information, Message Warnings etc.



MULTIPLE INPUT UNIT

MIU allows for up to 12 separate movement sensors or switches to be connected to the TDU. Each sensor triggers its own unique message, output via any 8 ohm unpowered, powered or amplified speaker.



SPEAKER SWITCHING UNIT

SSU allows for up to 12 separate speakers to be connected to the TDU so that each sensor triggers its own separate message, output on its own separate speaker. Background music can be played at all other times.



AUDIO SWITCHING UNIT

ASU allows the TDU to be connected to any existing PA or Background Music system. The existing PA or Background Music system is then muted or faded whenever a TDU message is broadcast and then reconnected when finished.



TELEPHONE LINE SIMULATORS FOR TESTING, TRAINING, DEMONSTRATION

RINGMASTER STD

Will allow any 2 telephone devices to ring and communicate with each other, without the need to make costly calls and occupy 2 lines. Ideal for Testing, Training & Demonstration of all telephone devices.



RINGMASTER PRO

Provides all facilities of the STD model, and in addition provides Australian Dial Tone, Busy Tone and multiple ring outputs including FaxStream Duet & Multiple Number ring. Also available with USA, UK, or other output.



RINGMASTER CLI

Provides all facilities of the PRO model and in addition will generate CallerID (Calling Number Display) output in conjunction with any Telstra ring pattern. Provides 10 preset outputs, plus Alphanumeric & user definable transmissions.



RINGMASTER INTERNATIONAL

International Version provides switch selectable dial tone, busy tone and ring output emulation for over 20 countries.

Ideal for exporters of telecommunications equipment.



MANUFACTURED IN AUSTRALIA



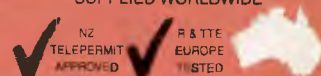
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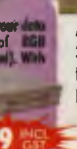
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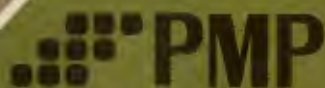
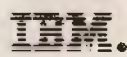
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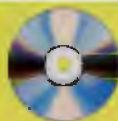
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